COMMODORE

COMPUTING INTERNATIONAL

APRIL 1987

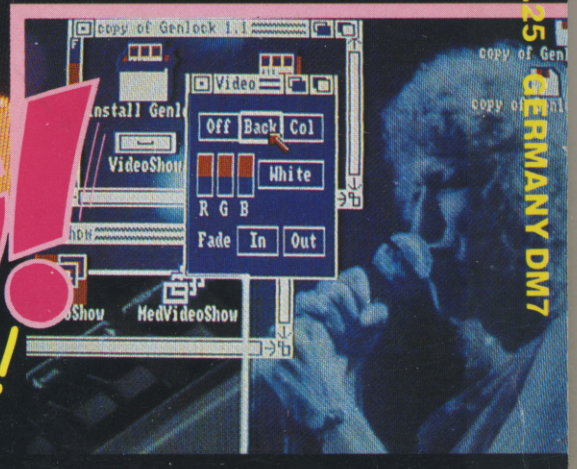
BELGIUM FR1.30 CANADA $3.50 USA $3.25 GERMANY DM7

Zinggg! go images of the computer

64 – Image System and Voicemaster

128 – Blitz and Swiftcalc

Plus/4 Light Pen and Micronet.



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Goes the Amiga too!

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Microprose Simulation Set...
Nosferatu...Way of the Tiger...
Footballer of the Year ...
G.A.C. Handbooks...and *ZING*!

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Good news!

If you want to get the most out of your Commodore 128 or 64, we have goods news for you. The Pocket 128 and 64 Series of Software both offer you serious, professional quality software packages that are easy to use and inexpensive.

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Pocket 128 or 64 packages have all the power you're ever likely to need. They have all of the features you'd expect in top-of-the-line software, and then some. The good news is that Pocket 128 or 64 Software Packages are priced way down there ... where you can afford them.
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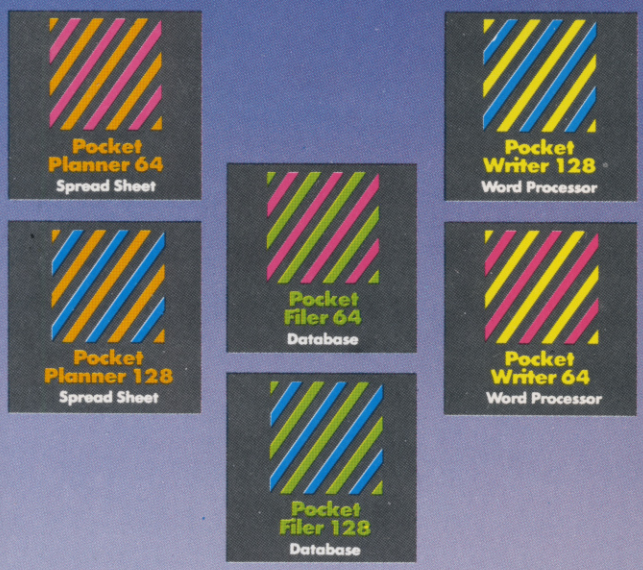
The bottom line is Solutions

The word solutions is our middle name and bottom line. When you purchase Pocket 128 or 64 software, you can count on it to solve your problems.



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Richmond Hill, Ontario
Canada L4B 1B9
telephone (416) 731-8775

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[2]Visicalc is a registered trademark of Software Arts

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What you see is what you get

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Pocket Planner 128 or 64 software lets you make fast work of all your bookkeeping chores. Cheque books, household accounts, business forecasting and bookkeeping are just some of the jobs that Pocket Planner 128 or 64 packages make easier. You can even create four different kinds of graphs.

Accurate, sophisticated and easy to use. Pocket Planner 128 or 64 offers standard spreadsheet features plus ...

- accuracy up to 16 digits, about twice as many as most spreadsheets for the Commodore 128 or 64
- sideways printing available on dot matrix printers, for oversized spreadsheets that won't fit on standard paper
- **on-screen help** at all levels
- compatible with VisiCalc™ files
- 80 column on-screen option for the Commodore 64 in addition to the standard 40 columns
- graphics include **bar**, **stacked bar**, **line** and **pie** graphs that can also be used in word processing files
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Pocket Filer 128 or 64 Database Manager

Database management made easy

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- use up to 255 fields per record (2,000 characters per record)
- sorts by up to 9 criteria, can save 9 different sorts
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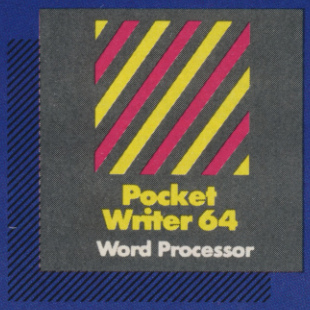
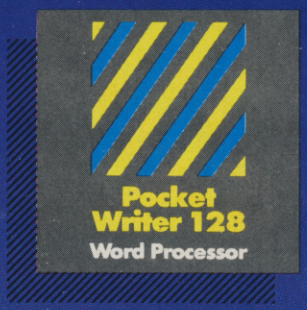
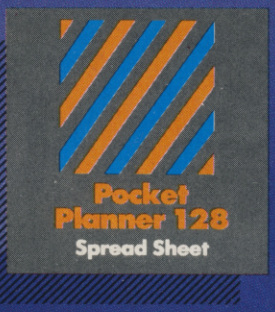
- flexible report formatting including **headers** and **footers**
- optional password protection including **limited access viewing** or **updating**
- on-screen help at all levels
- print from any record to any record
- arithmetic and trigonometric functions in **reports** using up to 16 digit accuracy

Solutions!



PW 128/64 Dictionary
also available





Best-selling software for Your Commodore 128 or 64

You want the very best software you can find for your Commodore 128 or 64, right?

You want integrated software — word processing, database and spreadsheet applications — at a sensible price. But, you also want top-of-the-line features. Well, our Pocket 128/64 software goes one better.

With Pocket 128 or 64, you'll find all the features you can imagine . . . and then some. And Pocket 128/64 is so easy to use, you won't even need the reference guide. On-screen and in memory instructions will have you up and running in less than 30 minutes, even if you've never used a computer before.

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Pocket Writer 128 and 64 are available in French — full AZERTY keyboard support.

The best value Commodore magazine in the Universe!

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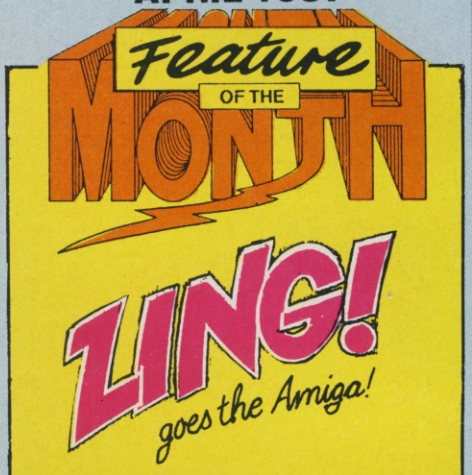
APRIL 1987



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NEXT MONTH

Basic for Beginners . . . Getting Started with Commodore music . . . Picasso's Revenge and how to take it . . . Education computerstyle . . . and muchisimo more! Order your copy now!

CCI View

Dear Reader,

Included in this issue of CCI, is another Commodore Business and AMIGA User Magazine. This magazine is now distributed around the world but we thought that it would be of interest to you — and add value to your CCI. In it, there is news of two new AMIGAs. Jeff Minter in an interesting and as usual provocative column comments that the new lower price AMIGA will quickly take the place of the 64. A somewhat controversial idea, contradicted incidentally in our 'Market Leader' article by Konami's Luther de Gale.

We are also the first magazine to look at an interesting new graphics package, The Image System, and a long awaited ANCO sound peripheral. Games like Gremlin's Way of the Tiger, Tynesoft's Jet Set Willy II and Activision's Shanghai get Mega awards. Shanghai receives coverage too in 'AMIGA User' in a sharp look at the problems with current games on that machine. Micronet are making an interesting communications offer through CCI to Plus/4 owners and Peter Gerrard, onetime editorial star of CCI, returns to its pages with some expert words on 64 interrupts. There is even extra space for news and programs which seem very popular. With so much variety in the magazine, we hope CCI will provide some spice of life for everyone in the Commodore world.

Yours sincerely

Antony Jacobson

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particular, that U.S. Gold recognises him as an ideal choice to head up the sales and marketing of such high quality American software. Virtually the whole SSI range of products will not be marketed by U.S. Gold, a range that was previously only available on import at a prohibitive cost. The Broderbund range includes all new products along made available.

Jerry Howells told CCI that there was a "niche in the U.K. market that had little time devoted to it because of the lack of investment and the distribution channels not in place to promote specialist quality software."

CCI will be taking a close look at SSI titles in future issues.

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128 Blitz!

The legendary BLITZ Basic Compiler is now available for the Commodore 128 — from Supersoft.

Compatible with Commodore Basic on the 128 (including graphics commands), BLITZ also supports Basic extensions BLITZ can make ordinary Basic programs run 5, 10 or even 20 times faster!

Of course, anyone who's used a compiler will know that it isn't just the speed of the compiled code that's important — the time it takes to compile a program matters too. But then anyone who has used BLITZ on the 64 will know that it's possibly the fastet and easiest compiler of the lot.

BLITZ 128 costs £29.95 (inc VAT), and comes with a comprehensive manual.

Additional compiling options are available when a dual drive or two single drives are used.

Supersoft are also releasing a new version of BLITZ for the Commodore 64. BLITZ 64 is available on disk at £19.95, or (for the first time) on tape at £14.95.

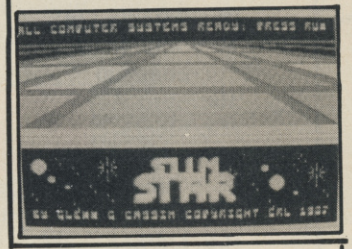
Star from CRL

CRL has announced the release of Sun Star for the Commodore 64/128.

Sun Star is a fast and furious game in which you are the pilot of the space craft Sun Star. You are destined for the Xxarion Star Corporation's solar energy grid to collect energy. However, due to a build-up of unstable energy pulses, that task is far from easy.

You must hurtle around the maze-like grid at breakneck speed destroying disrupter pulses to collect the fast moving energy crystals that are left behind. Avoid the grid walls and disrupter pulses or you will be destroyed!

The price of Sun Star is as yet undecided.



Martech's Nemesis

Martech has acquired the computer rights for the popular 2000 AD character, Nemesis the Warlock. Their first game with Nemesis takes an unusual viewpoint. Save the aliens from the baddie humans!

Nemesis the Warlock leads the Resistance Movement against Torquemada, Grand Master of the Terminators and has sworn to destroy the evil empire of the Termight. Torquemada has cleansed Termight of all aliens and is recognised as the protector of all human life on the planet. He treats the extinction of alien life as a religious crusade and sets about to cleanse the galaxy — only Nemesis can save the aliens.

In the game, Nemesis seeks out Torquemada in attempt to finally destroy him. Each new screen will provide him with different obstacles to overcome. The Terminators will try to destroy him before he can reach their Grand Master. But Nemesis is well-equipped; his trusty sword, Excessus, has killed many Terminators. If that fails he has his gun and the ability to breathe fire at his opponents. A word of warning — don't linger too long on the screen once you have killed the Terminators as they will return to life.

As Nemesis gets nearer to Torquemada his face will gradually appear at the bottom of the screen. Once fully visible — the final battle is about to begin.

Knit One

Russell Mason's enterprising Trueknit company are producing some very striking computer sweaters. These are emblazoned with the Commodore and Amiga logo and are available in black, brown, navy, red and rust. Logos are either white, gold or green. Matching scarves are also available (approx 55 inches long) for the real trendsetter. They are made of 100% acrylic and come in all sizes. Jumpers are priced at £16.00 and scarves at £5.00. Outside UK add £2 p&p. Further details available from Trueknit.

Contact: Trueknit, 32 Hazell Way, Stoke Poges, Bucks. SL2 4DD.

ORC That will do nicely

64K? What about 64 Megabytes or even 200 megabytes — on a card the size of an American Express or Access card?

Optical Recording Corporation (ORC) are developing a card that will carry between 50 and 200 megabytes of user application on one side of a credit card device and a card drive that will transfer data at a rate of over one megabit per second in both read and write functions. The cards will share both text and digitized images.

The optical Memory Card represents capacity and performance 100 time greater than that of the Lasercard as trademarked by Drexler Technology Corporation and over 1,000 times that of the microchip-embedded Smart Cards. Commercial prototypes are slated for public demonstration in the second quarter of 1987.

Mindscape's U.S./U.K. Games

Mindscape are releasing in the U.S. for the Commodore 64 five new games. Hewson's *Uridium*, Gremlin's *Trailblazer*, Ocean's *Parallax*, Martech's *Uchi Mata* and *Fist: The Legend Continues* from Melbourne House.

In *Uridium*, you must fight off a squadron of enemy Super-Dreadnought ships.

Trailblazer offers you a series of soccer ball races that take you through hyperspace networks of changing colour grids.

Parallax put you and four other astronauts on an alien planet.

Based on Judo, *Uchi Mata* is an accurate and detailed martial arts simulation.

In another martial arts simulation, *Fist: The Legend Continues* puts you in the role of K...

company owned by Virgin Games.

Computer Scrabble includes a playing vocabulary of 12,000 to 20,000 words, depending on the hardware compatibility, and a built-in wordspeller that doublechecks every move. There are four difficulty levels making Computer Scrabble playable by all age groups.

Plus/4 Mag Plus

We have received the first issue of the Plus/4 Magazine we mentioned recently. Andrew Horton — their editor — tells us that quite a few people wrote to him and they are *all* happy with his magazine. CCI wish we could say the same! What Andrew's publication lacks in polish and professionalism, it probably makes up in energy and enthusiasm. Keep at it,

87 ... Twinky Goes Hiking ... Footballer of the Year ... Xeno ... Space Harrier ... Nosferatu ... Shanghai ... Way of the Tiger ... Jet Set Willy II ... Tracker ... Harvey Headbanger ... Astro ... Plumber ... Joey ... Voidrunner and Hellgate
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NEXT MONTH

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..news ...news ...news ...news

Martech Pulsates

Martech are releasing Pulsator, a multi-maze shoot 'em up with a challenging puzzle. It offers 5 game levels, each consisting of 49 rooms. On each level is a "Pulsy" who has to be rescued.

The aliens on each level become progressively more intelligent and will deplete your power if they touch you. (Don't touch me, you nasty alien!) The landscape of each level also becomes increasingly more difficult and hazardous to negotiate.

The game is far more complex than simply finding your way through a maze. Various pathways are blocked by gates. The gates can be opened or closed by passing over sensors. If a particular type of gate is closed and you pass over its associated sensor then it will open. If a gate is open and you pass over its sensor then it will close. It is this element of the game which makes it far more exciting than simply solving a maze.

Pulsator is a fast moving and addictive game, requiring quick reactions and quick thinking. It costs £8.95 for the 64/128 cassette, £12.95 disk.

U.S. Gold Appointment

U.S. Gold are pleased to announce the recent appointment of Jerry Howells as Product Manager for a range of SSI and Broderbund products to be launched this year. Howells has over five years experience in the computer industry, mainly in a retail capacity. It was because of his familiarity of the American market and these brands in particular, that U.S. Gold recognises him as an ideal choice to head up the sales and marketing of such high quality American software. Virtually the whole SSI range of products will not be marketed by U.S. Gold, a range that was previously only available on import at a prohibitive cost. The Broderbund range includes all new products along with the back catalogue which be featured on the Americana range and also in a series of compilations. Such American best sellers as Print Shop and the Broderbund range of interactive adventures including "Where in the World is Carmen San Diego" will be made available.

Jerry Howells told CCI that there was a "niche in the U.K. market that had little time devoted to it because of the lack of investment and the distribution channels not in place to promote specialist quality software."

CCI will be taking a close look at SSI titles in future issues.

Graham Gooch's Test Cricket Now For The Commodore 128

Graham Gooch's Test Cricket for the Commodore 128 is the most sophisticated yet of the Graham Gooch range, and has to be the most comprehensive (and ideologically sound) cricket games ever. It is also one of the first games to be made available specifically for the 128.

Audiogenic Software have utilised the full 128K memory capability by providing all the facilities of the original 64 version — including the life-like animated graphics, the choice of arcade or simulation mode, the ability to enter your own teams, and the full scoreboard displays — plus the following additions: speech; nine built-in test squads with non-racist graphics; two player arcade mode; more control over the bowler; practice mode; action replays; and extra scrolling messages.

Test squads included are England, Australia, West Indies, New Zealand, India, Pakistan and Sri Lanka (South Africa is, of course, boycotted), plus a World eleven picked from the cream of current worldwide cricketing talent, and an All-Time eleven made up of past and present cricketing greats like W.G. Grace and Don Bradman. The attention to detail is such that, instead of having everyone a uniform shade of pink, black and coloured players are depicted on screen as such.

Two players can now play simultaneously in arcade mode, with joystick control over the batsman and bowler. Gameplay has been sharpened by giving additional control of the timing of the bowler's delivery. Practice mode has been included to allow players to get the feel of batting and bowling before starting a full Test match or one of the limited over options.

Extra touches like high quality digitised speech, action replays of wickets, and extra scrolling messages giving the state of play, all go to make Graham Gooch's Test Cricket for the 128 the ultimate simulation of our noble game. The program is available now on cassette for £9.95 and on disk for £11.95.

The GAC Paper Management System

Incentive have just released a Paper Management System, in the form of Designer Pad. Each pad has over 200 double-sided pages of A4 and will aid the development of GAC produced adventures.

The Pad was designed by Tony Stansfield, Robert Ford and Wayne Phillips, and compliments the GAC on all formats.

The GAC Designer Pad retails at £7.95 plus £1.25 towards postage (it actually costs more!), and is available from: **Incentive Software Limited, 2 Minerva House, Calleva Park, Aldermaston, Berks. RG7 4QW. Tel: (03356) 77288.**

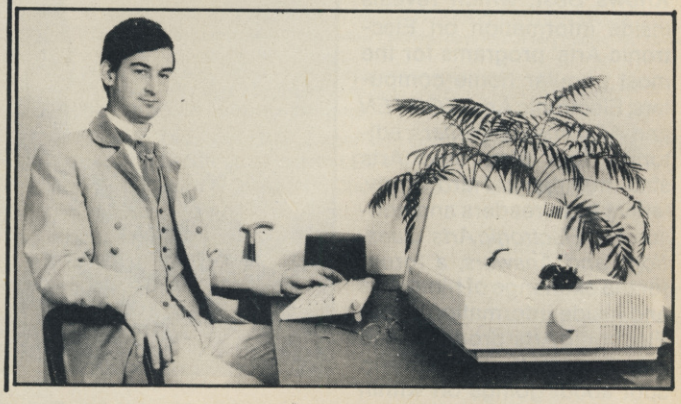
Amanda Takes The Cake

Coming soon on Ariolasoft's REAKTOR label is 'KILLER RING' for C64/128. This fast and furious shoot 'em up will, Amanda 'chief cake tester' Barry assures us, take your breath away!

Written by ace programmer Tony Crowther, 'KILLER RING' is a lesson in destruction. The golden rule to remember here is — if it moves, shoot it! (But if you're into text-filled inlay cards — there's a recipe for K-Ring cup cakes to keep you happy). C64/128 Cass and Disk £8.99/ £12.99.

150 Years Old

"Sir Isaac Pitman", alias great-great-grandson James Pitman, feels right at home with computers 150 years after the invention of Pitman shorthand. James is Product Manager of Computer Publications for London-based Pitman Publishing, now the largest international business education publisher in the world and part of the Pearson PLC group. Pitman Publishing plans a year of educational events to celebrate 150 years of business innovation.



...news ...news ...news ...news

Status Go U.K.

The first low-price games for the PC are beginning to appear. Status Software (the name given to the latest full-price label of leisure software from Creative Sparks Publishing) will be brining out its first titles — ICON: Quest for the Ring and FORTUNE TELLER for IBM PC and compatibles.

ICON: Quest for the Ring is an exciting arcade adventure about a Norse chief who, in his ambition to live as noble a life as possible, tries to retrieve a golden ring from the creatures of the underworld and return it to the lovely Rhinemaidens — the rightful owners. In order to do this he must escape from the maze of dungeons filled with trecherous and classical monsters trying to kill him at every turn. On his side he has the ICONs, virtues hidden deep in the caverns of the underworld. However, these powerful weapons must be used with extreme caution — misuse at any time could result in an agonising death!

Finally, the virtue of the Norseman himself is put to the test — having found the priceless golden ring, does he return it to the Rhinemaidens, or greedily keep it for himself?

Fortune Teller . . . Prepare for the future shock! No game this, but an uncannily accurate predictor of what's in the future for you. Touch a few buttons, give exact information on time, date and place of your birth, and FORTUNE TELLER will reveal details of love, marriage, adventure, health and much more . . . Based upon an astrology system perfected by Hindu Yogis — for use on your own, at parties, or with the family — you can't afford to be without your own private oracle!

Both of these Status Software titles retail at £14.95. They run on IBM PC and compatibles, including the Commodore PC's.

Status are also releasing a 'supersparkle', Cyber I. It is an arcade, 'shoot 'em up' game, featuring high quality graphics. Cyber I the last Federation Starship to survive an inter-galactic conflict with its opponents lunges and attacks in an attempt to kill a swarm of aggressors, whilst protecting his own mothership. A gun sight at the bottom of the screen is there to aid accurate gunning in this shoot to kill thriller. On Commodore 64 —£2.99.

E.A. Goes Farther

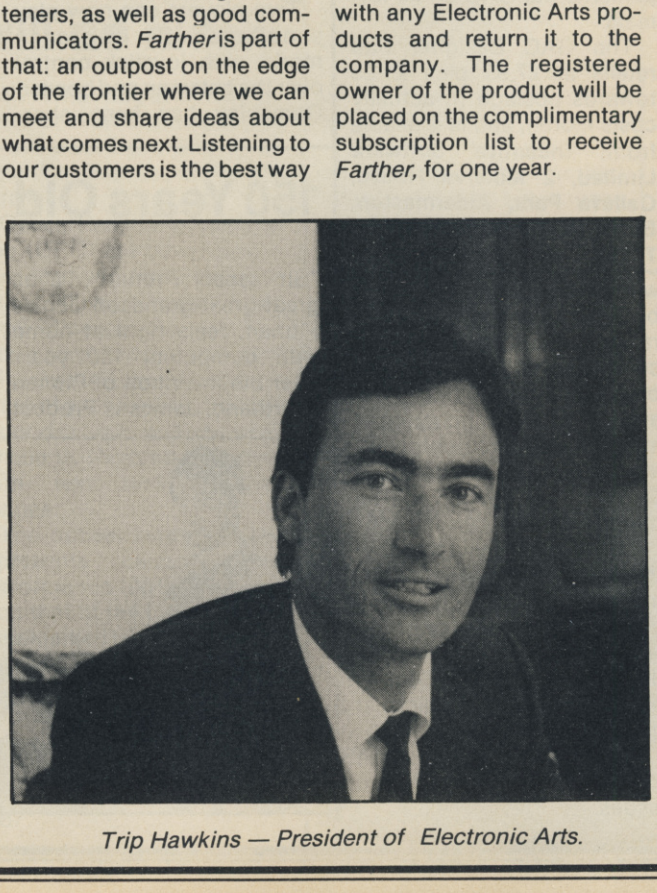
Electronic Arts has announced the publication of a quarterly magazine, *Farther, The Electronic Arts Magazine.*

Feature articles will include a range of topics, from an extensive look at the elements that go into creating Electronic Arts programs to specific columns such as: *In Depth,* a column which will delve into the personalities of artists and software developers; and *A Few Moments With...*, a question and answer column which will spotlight the people behind Electronic Arts programs and their recent achievements.

It will also include *Farther Knows Best*, which reveals inside information on Electronic Arts' programs for the most popular home computers; Electronic Arts' *TOP TEN* and *All-Time Bestsellers;* editorials and Electronic Arts staff members; *Hard Copy,* letters from readers and consumers; *Electronic Arts' Questions and Answers,* a forum for the exchange of hints, tips and inside information about Electronic Arts' products; and *Life With Farther,* the gossip spot about goings on within Electronic Arts.

"Electronic Arts is dedicated to the idea of building software that makes people fee good about having a computer in their home," explained Trip Hawkins, President of Electronic Arts. "To do that well, we have to be good listeners, as well as good communicators. *Farther* is part of that: an outpost on the edge of the frontier where we can meet and share ideas about what comes next. Listening to our customers is the best way we can think of to thank them for being an Electronic Arts customer, and for investing in our vision of what home computing can be."

To subscribe to *Farther* all one has to do is fill out the warranty card found enclosed with any Electronic Arts products and return it to the company. The registered owner of the product will be placed on the complimentary subscription list to receive *Farther,* for one year.



Trip Hawkins — President of Electronic Arts.

Infocom goes to Hollywood

You take the starring role in Hollywood Hijinx a wacky tribute to "B" movies. Who can forget those outrageous "B" movies produced by your Hollywood mogul uncle, Buddy Burbank? Now he and Aunt Hildegarde have given you the starring role in the zaniest production yet. You've inherited their entire estate — with one quirky stipulation. You can only claim your booty if you find ten treasures hidden throughout their sprawling Malibu home. If you can't find them all in one night, you lose the whole caboodle.

Scheduled for February release, HOLLYWOOD HIJINX was written by "Hollywood" Dave Anderson. "Hollywood" is a native Californian whose Hawaiian shirts and baggy shorts fit right in with the beach mural and goldfish that decorate his Infocom office.

Whether from first-hand experience or fertile imagination, Anderson has created an environment as kitschy and full of gags as any "B" movie. The house is Hollywood at its glitziest, with a gaudy round bed, bathroom faucets in the shape of Oscars, and a luxurious private screening room. There's also an enormous hedge maze, which Anderson designed with the help of 700 paper clips.

To add to the fun, you're treated to amusing anecdotes about your childhood with Hildegarde, Buddy, and Cousin Herman, as well as descriptions of the offbeat plots and paraphernalia of Buddy Burbank's never-to-be-forgotten films. Even the "treasures" you seek are actually goofy props from old Buddy Burbank films.

HOLLYWOOD HIJINX is loaded with puzzles that recall the pure logic problems of ZORK. In one of Infocom's zaniest puzzles yet, you'll control a special effects creature from an Uncle Buddy science fiction classic.

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THE IMAGE

CRL's new graphics package claims to be "a computer graphic package with a difference". Zack Skinner takes a close look to find out if he and you will be disappointed or be shouting "Vive la difference!".

CRL do not immediately leap to mind as a company who would produce a brand new graphics package. Yet here they are coming up with a piece of software for the 64 (also for the 128 in 64 mode) that sets out to challenge for a market which already has a number of well-regarded, well-established graphic products. Recent CCI s have seen such interesting packages as Rainbird's ART STUDIO and Culton's DRAWING BOARD — both interesting from the graphics point of view and by no means expensive. What can CRL's IMAGE SYSTEMoffer that theotherscannot and is it worth buying if you do not yet possess a graphics package?

Well, it is certainly not difficult to use. Most of the time, the rankest novice can make it work with no great effort of technique or creativity. Creativity, that's a word we'll come back to later. One of the reasons it is simple to start with is that it uses the familiar joystick for many of its commands — although it is recommended to use a tracker ball if you have got one THE IMAGE SYSTEM has the helpful idea of using windows and pull-down menus to bring all its functions together and to make it easy to select the substantial number of relatively sophisticated operations that it makes available. Most of them you control with nothing more complicated than a squeeze on the fire button — not very difficult for anyone. You simply guide the cursor, arrow shaped like that of the AMIGA, onto the appropriate icon, press the fire button and you are away. There are only a few functions for which you have to return to the keyboard. One of these — the Commodore key — just lets you pull up the Master Control Screen to view the whole graphics screen.

The Magnification Window is, in effect, a zoom that lets you take an enlarged view of the pixels surrounding the cursor. The actual pixel you are looking at appears inside the small flashing box at the centre of the window. A useful idea, as you might be trying to work on just one pixel. You also have a memory meter to keep track of free memory available for image or text font storage. There are roughly 10k bytes of image storage available. If you go over the top of that you will have to save or erase images.

MENUS

There are eight main menus that give access to THE IMAGE SYSTEM's draw functions. Across the top of the Master Control Screen, there is a menu bar. When you move the cursor onto one of the menu headings, press the fire button, down comes an option menu. Moving the cursor while the fire button is held down lets you make your selection; releasing the fire button activates your selection. There are some sub-menus, such as the Printer option that will give you a further menu option. Some others, like the Clear Screen option, will bring down what THE IMAGE SYSTEM calls "Communication Windows. These contain restricted but important choices such as continuing or clearing the screen which you have to complete before the system will let you go on.

THE MENU LIST

These are the main menus

DRAW
IMAGE
BRUSH
TEXTURE
TEXT
PRINT
and the SPECIAL Menu.

DRAW gives you Spray — random patterns of pixels; a standard Flood Fill; Area colour which lets you change colour for a definable area; Colour scheme that differentiates in specific colours within an area; Colour copy which lets you copy and move colour in rectangular shapes. There is also a number of other options such as drawing an ellipse or circle; or boxes and lines.

THE IMAGE MENU

One of the most important features of THE IMAGE SYSTEM is its ability to store and manipulate sub-images. Up to 64 separate images can be stored in memory for later retrieval. Each image is essentially two-dimensional but can be scaled and distorted with very little restriction to provide effects normally only associated with expensive systems. An image can be anything from a single pixel up to an entire screen — though practical limitations such as available memory space will not permit many very large images to be held in memory simultaneously.

You can print the resulting image to the graphics screen. The prepared box can be moved freely around the screen and printed repeatedly. You can eliminate specific pixels from the image during printing to give the illusion that certain part of your image are transparent. Rather a bright idea.

THE BRUSH MENU

THE IMAGE SYSTEM supports 32 user re-definable brush templates for drawing purposes. The templates are used as 'masks' for the associated texture patterns.

The entire set of brush templates can be saved to tape or disk and a new set loaded.

SYSTEM

You can print the actual brush template onto the screen enabling you to edit its shape. All brushes are 16 pixels wide (8 in Multi-colour mode) by 16 pixels high.

THE TEXTURE MENU

As well as the brush templates, THE IMAGE SYSTEM also supports 64 user-re-definable texture patterns. Like the brushes the patterns are 16 pixels wide (8 in Multi-colour mode) by 16 pixels high. Any texture can be dumped to the screen for subsequent editing.

THE SPECIAL MENU

This menu gives you some helpful utilities like Cursor Speed adjusting from very slow — which may be suitable for detailed joystick control — to very fast which is intended for working with tracker-balls.

For those who wish to use pictures in their own programs there is a simple Basic program which loads and displays pictures created using THE IMAGE SYSTEM.

The manual provided for this range of features is, believe it or not, very short — 12 pages — and sharply to the point. It is easy to follow and is clearly written for the non-expert.

THE TEXT MENU

THE IMAGE SYSTEM also provides a fairly flexible text printing facility. Up to 90 different characters can be produced directly from the keyboard. Entire fonts can be saved to disk or tape and new fonts loaded in as required. Individual characters or completely new fonts can be defined using the text grab function. Text characters can be any size from a single pixel to an image up to 32 pixels wide (16 in Multi-colour mode) byt 48 pixels high.

THE PRINT MENU

THE IMAGE SYSTEM provides for producing hard copy printouts off the graphics screen with Commodore matrix printers connected to the 64's serial port and Epson compatible printers connected to the user port via a Centronics standard interface.

For users with disk drives a set of useful utilities has been provided. Disks can be formatted, files scratched or renamed and the current disk directory can be examined.

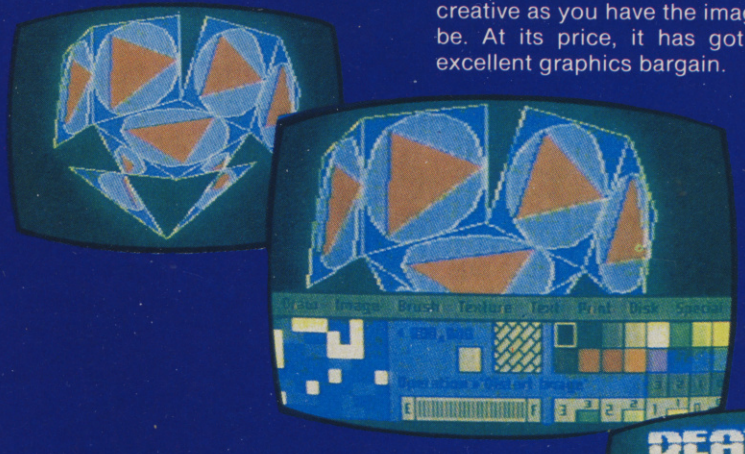
The "Difference" that CRL claims for its graphics package is that, in addition to providing the usual drawing or painting facilities THE IMAGE SYSTEM lets you create your own text fonts. It also cleverly lets you zoom, scale, rotate even fold your pictures in a simulated 3D environment. Well, it is true to say that not all graphics packages of this level do provide all these facilities, especially at this price. However, in most cases you could probably make out reasonably well if you tried hard enough with what they have — or were sufficiently expert. What I think makes this package an excellent buy is not that at all. It is, apart from the low price, the exceptional ease of use.

It is clear that anyone could use this package to produce some very adequate graphics results. The menus are simple to use and the whole IMAGE SYSTEM is really 'user friendly'. You put it up and away you go.

Some of the results that have been produced by experienced artists you can see on these pages and no-one would be ashamed to call them first class. One of the others has been used on the cover of this CCI. I have seen worse results produced on much more expensive systems or even on the AMIGA, which is the standard by which all graphics is today beginningto be judged.

And that brings me back to "creativity". CRL claims that THE IMAGE SYSTEM will "let your creativity flow". There's no doubt that is an absolutely true claim. It is a package that you can master in a reasonably short time. It has lots of easy and attractive features. It can be an ideal package for a first-timer in the graphics field. It will let you be as creative as you have the imagination to be. At its price, it has got to be an excellent graphics bargain.

Z.S.



..news...news...news...news

Auf Wiedersehen Monty

Poor, persecuted Monty Mole, who was incarcerated by the bastions of the law for borrowing coal to keep warm, has escaped and fled these pleasant isles.

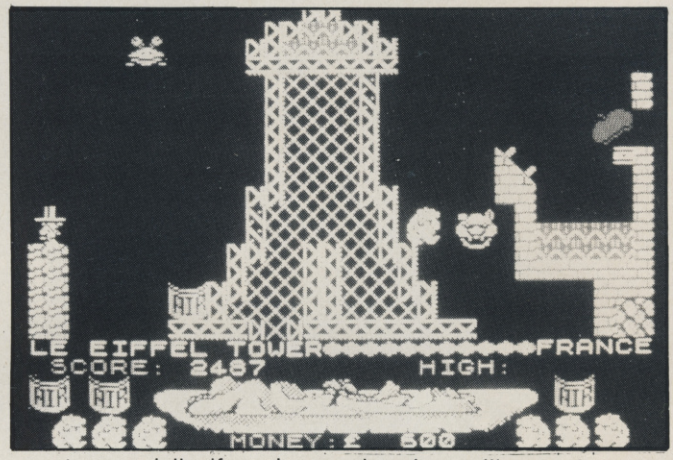
Lying low in Gibraltar, Monty's whereabouts have been leaked to "Intermole", who are in hot pursuit!

Can you help Monty in his last fight for freedom? He must flee for his life across Europe, in an effort to raise enough money to buy the Greek island of Montos. On Montos Monty will at last escape extradition as no one else even knows of its existence.

Travel across the continent with our mole, 'acquiring' travellers cheques and many other valuables on your way. Could Monty make a few Francs from fencing the Mona Lisa? Can our intrepid Mole repair his car in time to compete in the Grand Prix? The prize money could come in handy. The Mafia may help him if he can avoid the 'heavy duty footwear'.

Romance awaits Monty in Venice in the form of 'Mole Fatale', the fair Juliet. Her heart begs to be captured by a darling Muscle Mole — is Monty her mole?

As every illegal alien knows, a Swiss bank account is a must, especially if you're a mole 'cos they don't have pockets! Monty must arrange his finances before he's able to retire in comfort on Montos, so guide him to Zurich and a numbers only account!



The follow up to Wanted: Monty Mole, Monty is Innocent and Monty on the Run, AUF WIEDERSEHEN MONTY is the ultimate Monty adventure. Written by the author of the first 'montyventure' — PETER HARRAP, Auf Wiedersehen will appeal to the cult following that Monty has acquired.

Gremlin have put their heads together to create the last in this popular series. Never has a character proved so popular with the software buying public and many will be sorry to see him go. Monty will be with you shortly.

GAC Adventure Writers Handbook

Incentive have just released a fifty page booklet for GAC adventure writers entitled the GAC Adventure Writers Handbook (GACAWH for short!).

The book is compiled by several authorities on GAC and includes many chapters including: How To Write a Good Adventure, Multiple Loading Techniques, What is a Condition?, Markers and Hints on Text and Graphics and a list of Adventure Clubs and Magazines.

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Timeworks SWIFTCALC-128 with SIDEWAYS

In all honesty the arrival of yet another spreadsheet for the Commodore 128 was greeted with groans at the Donald mansion until I realised that this was different. Not only does it include a graphics option but also the facility to print out very wide spreadsheets, viz. those wider than 80 or 132 columns, by rotating the text through 90 degrees — very clever stuff indeed. So let's take a look at **Swiftcalc-128.**

The product is designed for use on the Commodore 128 in 80-column mode supporting either monochrome or colour — there is no provision for 40-column display. Loading is commendably fast and a spreadsheet of maximum dimensions 250 rows by 250 columns is available. Timeworks Ltd, the supplier make a variety of software products for the Commodore 128 including their **Data-Manager** and **Word-Writer,** a database and word processor respectively. These can interlink data together although on testing **Swiftcalc-128** with competitive products such as **Superscript-128** and **Superbase-128** presented problems — the files are incompatible. I decided against examining the files on the disk with an editor purely on the basis that it was too much messing around and the manual provided no clues as to the filing structure. A disappointment this since this form of *locking-in* users with your own range of products is ultimately short-sighted in the long term. So gentlemen, I'm still looking for a *standard* spreadsheet for my 128D.

The manual supplied with **Swiftcalc-128** was excellent, 191 pages with the bonus of an index and examples shows that, at last the software houses are getting the message about poor quality manuals. It is easily the best I have seen for any Commodore 128 spreadsheet — a pity the author(s) does not get a credit for a work to be proud of. Printer support includes both RS-232 and Centronics (both from the User Port) in addition to the usual Commodore series printers. The technique which the **Sideways** option uses is to switch the printer into graphics mode — users should note that this can be heavy on your printer ribbon which needs to be either a new one or nearly-new in order to gain the full benefits of this option. Note that **Sideways** is a separate program from **Swiftcalc-128** and thus needs to be run independently. The spreadsheet operates on a *pull-down* menu which is accessed by means of the **esc**ape key. The headings and contents of each of these is as follows:

Graphics
- Vertical Bar Chart
- 3D Bar Chart
- Scatter Plot
- Line Plot
- Pie Chart
- Exploded Pie Chart
- Printer Options
  - *1525/MPS-801*
  - *1526*
  - *Epson 1*
  - *Epson 2*
  - *Panasonic*
  - *Okidata*
  - *MPS-1000*

Print
- Print Spreadsheet
- Set Printer
- Change Page Length
- Change Line Length
- Create Sideways File

Functions
- Format
- Width
- Move
- Copy
- Sort
- Search
- Search & Replace
- Memory Remaining

Disk Commands
- Save File
- Load File
- View Directory
- Erase File
- Rename File
  - *Save WORD WRITER File*
  - *Load DM/SWIFTCALC File*

Delete
- Delete Block
- Delete to End

Tab
- Tab Set
- Tab Clear

Quit
- Reset Swiftcalc
- Return to System

A flaw in **Swiftcalc-128** manifested itself in the selection of *set printer* option in the *Print* menu — with the printer off-line or not connected, the system locked completely. Obviously the programmer had either disconnected the IRQ from the RESTORE key and not provided the vectored restart or failed to provide a *timeout* recovery mechanism in the printer driver — either was not good programming practice, the user should always be provided with an escape route from any situation.

The functions provided can handle up to 17 digits, although do not be fooled into thinking that this is the numeric precision, this is a function of the operating system and processor. The usual spreadsheet and mathematical functions were provided along with financial functions such as *present* and *future* values of variable or fixed sum. A limited level of programming was built in by the appearance of an *if-then-else* logical control. Another useful feature of the functions was the *Range* facility. This allows the testing of a range of values on a *what-if* basis although this could only operate by reference to the cells numbers directly, it would have been nice to define and use *named* ranges which are much more convenient.

Probably the most impressive feature of **Swiftcalc-128** was the graphics functions. These were wide in scope but also very quick to appear on the screen. The charts appear very quickly indeed after definement of the parameters — not as quick as an AMIGA, but not all that far behind either and certainly the fastest high resolution graphics I have seen on a Commodore 8-bit machine. I would guess that the programmer is holding a complete screen in the 80-column memory continually thus all that is required is resetting the screen address.

Provision is made for an on-line *Help* facility which appears as a window. This scrolls to reveal the full range of available functions although it could be clearer to the user that a scroll action is necessary to access the rest of the window. The help is useful but one particular aspect of **Swiftcalc-128** that did not please me was the use of the escape key to end a request. This key is an obvious choice for beginning a request but I felt that the RETURN key was the logical candidate for completing a request. Incidentally the supplier also operates a technical support facility for users with tricky problems. Very useful.

Overall, **Swiftcalc-128** is very good but could possibly be made better. The design philosophy has clearly been based on that of an earlier product for the Commodore 64. This was acceptable in the days when users had to contend with 40 columns and the programmer had to fit it all into 64k. However, at this level of the market the demands and expectations of users have changed considerably since the arrival of hardware such as the Commodore 128. Nevertheless a good product living up to the Timeworks standard. **B.D.**

Price: £57.50

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128 Hit by Blitz

The 128 version of the basic compiler BLITZ.

If you want to supercharge your basic programs, make them run much faster without writing machine code, then this is for you.

Supersoft, one of the few companies still specialising in Commodore software, have released this version for the 128, 18 months after the release of the very successful 64 version. One thing I like about this latest version is the new price. Talk about value — the original BLITZ 64 sold for £50 last year — the latest prices must be a snip! For £29.95 you get the 128 version or £19.95 for the 64 disk and £14.95 for the 64 tape version.

There is a real need for the programmer, who has not progressed on to machine code, to have his tortoise pace basic programs speeded up. The publishers, in their literature, claim to produce increased speeds of 5, 10 or even 20 times faster! However the programs I converted to BLITZ averaged an increased speed of only around 1½ times. I don't know what I get wrong!

The new 128 version is, of course, now highly compatible with all of the basic V7.0 and, indeed, with some of the basic extensions available. BLITZ is so easy and simple to use. The 12 page instruction manual that accompanies the compiler is concise enough. With an explanation of the six options and five different modes of operating. Error correction and debugging is covered along with further comments on BLITZ v's basic, in order to help your original program gain more speed if the basic copy is written the way BLITZ likes it to be.

The different options available are for either supporting full basic V7.0 syntax or a limited syntax that has no collision command or resume with a line number rather than a variable. Single, dual or two single drives are catered for. If you're lucky enough to have two drives, then the modes you can operate in are greatly increased. These extra modes include batch compilation, linking programs or chaining.

After selecting your option and mode BLITZ takes over and converts the basic program into 'P' code — a kind of half way house to machine code. When finished, the compiled program is automatically saved to disk. The new directory name contains a prefix "C/" along with another "Z" cross reference file. The later file is only necessary if you have to trace an error that may have occurred during compilation. It is particularly important that your original basic copy does not contain any bugs as it will show an error during compilation. A program that you know works without any hitch will be fodder to BLITZ and always converts without any problems. The compiled program also disables list.

BLITZ condenses basic to around 60 per cent of its original size. You would expect to see the finished program size to be smaller but there is, however a snag — isn't there always? BLITZ carries a large overhead to cater with the new 128's basic — a staggering 11K — opposed to the 6K for the 64 BLITZ version. This is to allow space for "run time routines" for each program. This means that you only save space on programs that contained 28K or more. I am sure that it is a small price to pay for the convenience of faster programs.

I must say that Supersoft have a very worthwhile product in BLITZ 128. This has to be a very easy way for the basic programmer to have the extra speed needed to make his basic programs run at a more professional pace.

B.C.

Supplier: SUPERSOFT, Winchester House, Canning Road, Wealdstone, Harrow, Middx. HA3 7SJ.

COMPETITION RESULTS!

CAPTION COMPETITION

1st: Chris McLean, Cheshire.
2nd: J. M. Jones, Dumfriesshire; D. T. Lynch, Kent.

64C CAPTION COMPETITION

1st: J. Wainwright, Pontefract, W. Yorkshire.
2nd: Sean Perry, Hyde; David Bell, Swindon; Russell Furnival, Runcorn; L. Shannon, Gwynedd; Jon Sheppard, Walsall.

DRACULA COMPETITION

Lee Russell, Forest Gate, London; J. Tyrell, Liverpool; Geoff Bayliss, Fife; K. Evans, Liverpool; Chris Garbutt; Basildon; Craig McCullough, Co. Down; David Connor, Liverpool.

UCHI-MATA COMPETITION

Helen Howe, Ashford.

SIMULATIONS

Chris Garbutt, Basildon; P. Evans, Liverpool; Mario Crouch, W. Germany; P. Cheesbrough, Cumbria; P. Whalley, Essex; S. James, Salford; S. D. Lann, Southampton; R. Palmer, Stafford; A. A. Protano, Salford; Emil Mazur, Cheshire; Michael Clarrie, Manchester; David Connor, Liverpool.

LEAPER (Disk Drive)

Mrs. M. Morgan, Fife, Scotland.

FINDERS KEEPERS

David Connor, Liverpool.

FIGHTING WORDS

The Jeff Minter Page

There are not many real stars in the computer world, but among them undoubtably glitters Jeff Minter, creator of innumerable smash-hit games. We've given Jeff the freedom to say what he wants (libel laws permitting!), so look out for his hard-hitting pages in future issues of CCI. You may not always agree with what he says, but he's certainly worth listening to. CCI won't always agree with what he says either, but we promise to print it anyway!

A high altitude article this month: I'm writing this in my flat in the French Alps, it's snowing outside making the pistes even better. I just got back from a morning's skiing (there is nothing quite like a good ski to get rid of a hangover!) I've got a C128 here and I'm putting in a few hours a day on Revenge II in between the piste and the bar.

I'm sorely missing my Atari ST, for Colourspace (Psychedelia on the Commodore just ain't the same) and also for writing this article — I haven't written a substantial amount longhand since I was at University, and my handwriting is completely shot.

At last we've seen the new AMIGA, the A500, and I must say it looks exactly as I expected it to; sort of a cross between a C128, same spaceship shape, and an ST. Gone is the daunting IBM-PC look of the old Amiga, and a good thing too. The A500 looks like a home computer, not a business box. When it's released it should have Kickstart in ROM, which is a relief, because one thing that has always annoyed me about the Amiga was that the operating system codes was always in a constant state of flux, and you could never be sure that your old software would run under a new release of Kickstart.

Given that Commodore can achieve the expected £500-odd price level for the A500, the Amiga should finally start to do great things. The A500 is what Commodore should have released in the first place; if they had, I suspect Atari would have had a hard time trying to sell the ST alongside it. As it is, the new Amiga should do very well as a logical (and affordable!) upgrade path for C64 owners, and the ST, being already well-established, won't die out; but I think that the introduction of the A500 will prompt Atari to dish out some hefty cuts. Look for a £200 ST sometime this year. £200 for a 512K 16-bit machine represents extraodinary value for money, and I see no reason why the ST should not sell strongly, alongside the A500.

Between them, the A500 and the ST will become the main-line machines of the 16-bit home market, much like the Commodore 64 and Spectrum are in the 8-bit market. 8-bit stuff will gradually die out, and within two years the C64 will be as dead as the Vic 20 is now.

This will, of course, cause a major upheaval in the software market. I don't think that there will be as many very young (sat 12-14 year old) owners of the new machines, at least at first, for unless they have very rich daddies indeed they won't be getting an A500 for Christmas! The owners of the new machines will be people who have had 8-bit machines, and who actually have an interest in machines, maybe programming or generally using the machines for a genuine purpose, not just games. So Johnny who has a 64 and tape deck and one joystick and just uses it as a games engine probably won't get an A500, but Jimmy who has a disk drive and a modem and is learning machine code etc., probably will.

But if you look at the software market, and specifically the likes of US Gold and Ocean *et al.*, you see that their whole existence is geared to selling to the schoolboy — games-machine type of user. These companies will have to begin producing quite different types of software for the 16-bit scene — conversions of old games just won't do. For a start, 16-bit stuff won't be at pocket money prices. To utilise fully the potential of one of these new machines takes a lot of time and creative input on behalf of the programmer, and such things don't come cheap. Plus, our 16-bit user is likely to want to more than just play a gamek. He'll want to be doing something more — designing his own games, making music whatever. The great thing about the new machines is that they have the power to make the creative process more accessible — even a non-artist can produce satisfying results on Neochrome or Colourspace, and someone who can't even read music can enjoy using instant music on the Amiga.

There will stil be a market for good games,but it won't be as large as the 8-bit market, where games constitute just about the whole scene (how many utilities have you seen in the Top 10?).

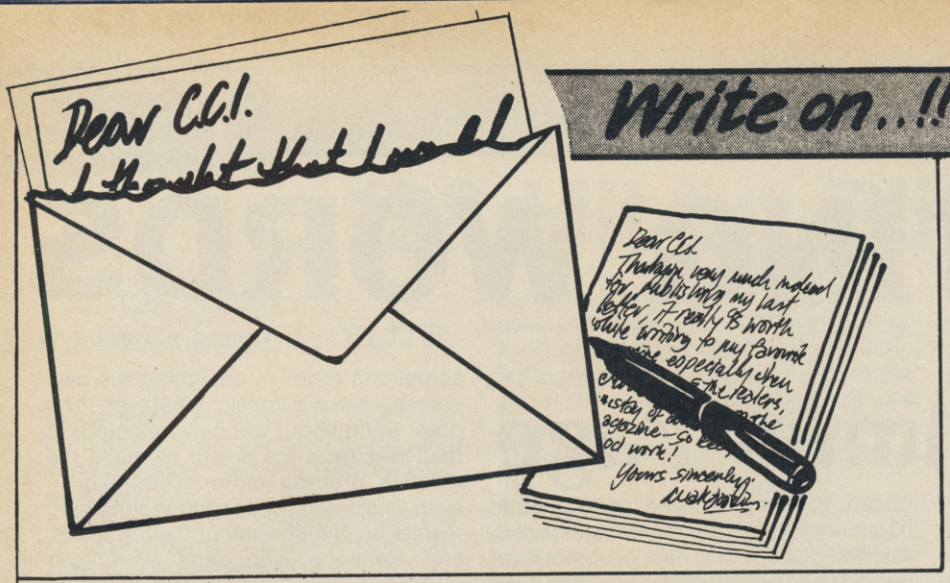
So in the new 16-bit era, look for a decline in the volume of games being produced, but an increase in quality; and look ofr a new generation of programs which use the power of the new machines to make the creative process in a variety of areas more accessible to the user. This type of software shows the way in which the software market is maturing; rather than the machine just being a 'toy' to play games on, it becomes a genuinely useful tool to provide easier access to the creative urge which lies within all of us. Basically, technology takes the place of a lengthy learning process, allowing us to develop more creative skills faster than has previously been possible.

Enough of this brave-new-world stuff anyway, and on to something more mundane but which might have a very satisfying twist to it: Both Atari and Amstrad are releasing games-only machines in the near future; the Amstrad based on the Spectrum (euch!) and the Atari based on the 8-bit Atari. If these are successful, Atari are thinking of releasing another game machine, this time based on the ST. Now, if this all comes together and Atari and Amstrad start making heavy bread in the dedicated game market, would it not be natural for Commodore to want a slice of the action? And guess what machine they'd use? The Amiga, right? If you know your Amiga history, you'll know that the Amiga was to be — a dedicated games machine! So during the course of its history the Amiga will have gone from game machine to business machine then home computer (via the A500) and finally back to its original, intended purpose. Very satisfying completion of the circle.

Well, that's it for this month — I must get back to more important things — like improving my skiing and getting a good tan!

J.M.

Write on..!!



Dear C.C.I.
Is the only way to get a letter published in your magazine by grovelling like Mr Bissell? (CCI March '87).

I too am an unfortunate Plus/4 owner. I say unfortunate for one reason only and that is for the lack of software. Thank goodness for Anco and Novagen, let's hope they keep them coming.

Now, what about CCI? Having tried all the others I just admit you're good, but don't get too big headed yet.

I would think by now software manufacturers would have learned that there is a market for Plus/4 software alone and not just C16 — Plus/4 compatible. So come on you big guns out there, let's have some of those C64 blockbusters converted to the Plus/4, it can be done.

And I would think that CCI could put some pressure on these companies publicity-wise — just think of the extra revenue you would get from more advertising.

Thank you for supporting the Plus/4 and I wouldn't mind becoming a software reviewer if you're short.

Yours, nearly as satisfied as Mr Bissell
K. F. Todd, South Yorkshire
We're keeping up the pressure on the software houses for more Plus/4 stuff but they're hard nuts to crack. When we get loads of Plus/4 software in, you'll be hearing from us about reviews!

Dear C.C.I.
I have been a regular reader of your magazine since its beginning as Commodore Horizons, and I have finally decided to write and tell you how good your publication is. As an owner of a Commodore C16, I, like many other C16ers have suffered from a lack of coverage of software etc for this micro. I have noticed, with great delight, the increase in coverage which you give to the C16, and I hope this will continue for years to come.

I must also say how delighted I was to see my name appear as one of the winners in a C16 competition, published in the December 1986 issue. I look forward very much to receiving my prize. I must add that it is good to see that C16ers are well catered for when it comes to competitions.

A major reason for my writing to you at this particular time is that I have been unable to buy the January 1987 issue of CCI. I would like to know if you can supply back numbers of CCI as I also do not have the September 1986 issue either! Before I go, I would like to say that many of your recent features about major software houses have been most interesting. It was especially good to see the one about Gremlin, a company which fully deserves praise, especially from C16 owners, for its continually-expanding catalogue of C16 software. As far as CCI's reviews are concerned, I do feel that in general, C16 reviews are a little too short, and very often, even though most games get a good review, it is never clearly stated what makes them so good.

Apart from the odd criticism, CCI has improved beyond all recognition as a computer publication, and provides a good balance of reviews, news, features, and competition, and I look forward to even more interesting features and perhaps new ones appearing in future editions. Many thanks for producing a magazine of excellent value!

Best wishes to all at CCI,
Barry Bowman, Prestwich, Manchester
Thanks for the compliments! Back issues are available at the price of £1.25 each (inc. postage). Send a cheque or P.O. to 'CCI Back Issues' at our address on this page.

Dear C.C.I.
As a PLUS/4 user I would like to congratulate you on producing a very good and interesting magazine. There is something in it for everyone especially for the C16 and PLUS/4 users.

Since I started buying CCI in December 1985 there has been nothing but improvement in your magazine. Your support for the PLUS/4 has put other Commodore magazines in the shade, and made software houses release decent software both business and entertainment.

Your games, business and book reviews are very well balanced as are the hints and tips, and programs. All in all this results in being the best Commodore magazine on the market. I shall carry on reading your magazine knowing that it will carry on improving the way it already has. Thank you for a truly fantastic magazine. Keep up the great work.

Your sincerely
Thomas F. Reid, Renfrew, Scotland.
Another satisfied customer . . .

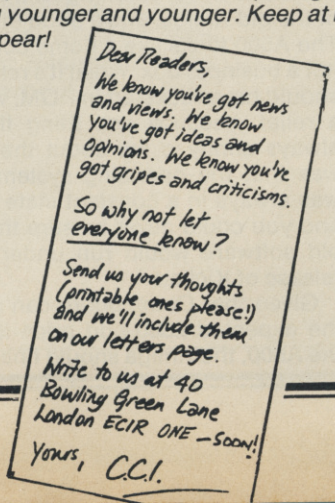
Dear C.C.I.
I am one Dave Clough, proud author of "3 Programs" as printed in your Jan 87 issue (page 196).

However there are no instructions with the programs which renders the last two completely useless. The vital instructions from PROGOBB 1 and 10 are: 1 On line 1 put the number of the last line number you want erased 2. Execute by RUN 5

3. On the INPUT (?) prompt enter the first line you want erased There is a mistake on line 0. It should read 0 × = PEEK (829) * 250) ¿ PEEK (828) : PRINT " " shift/CLR X:
PRINT RUN

Yours
D. Clough, London.
P.S. If you have any vacancies on your staff I'm not doing much just at the moment.
Thanks for passing on the info... it should clear up any confusion. As for a job, well Super Felix needs an assistant leg-puller is you're interested.

Dear C.C.I.
I like your magazine a lot (as so do others). But why do you make everthing big for the 64? I myself own a Plus/4, they are excellent computers! I've also noticed you being fair. Thank you very much, and I would recommend CCI to all, who have no magazines. And please, please apart from showing games, please show books. By the way, Amigas are fabulous, the best computers in the world. Anyway take this in the interest of the Plus/4 readers. And don't underate these computers, I have a lot of friends who have the same computer. 128s are much better than Plus/4s but please appreciate this superb computer. I am a professional programmer, 11 years old.
M.A. Spear, Wales.
Wow, a professional of 11. Computing is getting younger and younger. Keep at it M.A. Spear!



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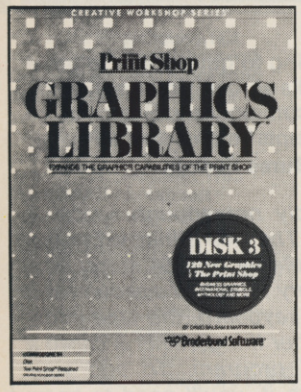

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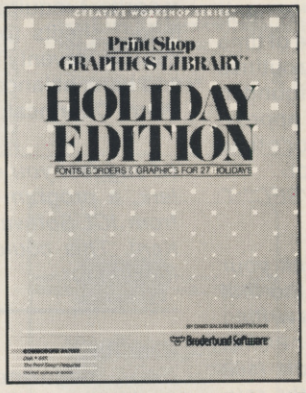

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Dear Rae...

This month your letters are answered by Rae West. Rae is the author of three large reference books on Commodore computers; the latest is Programming the Commodore 64, following Programming the VIC and Programming the PET/CBM. All are published in the UK by Level Ltd. Rae is also published in the USA by Compute! Books.

TRANSCRIPTION PROBLEMS . . .

Dear Rae,
'I entered 'Data Detective' (another program to print the day of week given the date) but all I get is a syntax error on line 10 . . .'
A.Allen

Line 10 in question (DIM M(12): For I=1 TO 12: READ A: M(I)=A: NEXT) certainly works on the Plus/4; you must have a typing error, which could be cleared up in seconds with a look at what you actually have on tape or disk. The Plus/4's Help Key may give you a clue where the mistake is. I'd guess you may have confused 'I' with '1', or possibly entered the program in shifted mode.

Dear Rae,
'I'm working on a C64 machine language program involving the movement of a ball, which I want to get as smooth as possible. The interrupt routine (which reads the keyboard, controls the cursor flash, etc) is obviously an important factor in the timing of animation, and I experimented to find its exact time by putting a wedge into $0314/5 to start timer B of C1A2 at £FFFF. A loop checked and deducted the value of time B from £FFFF using the FAC routines and printed the value out. I found it difficult to believe the result of approx. 9000, implying half the processor's time was spent servicing the interrupt.
like it: 0NPUT "INTERRUPTS/SEC";T:
D.N.Hookings, Criccieth.

Yes, I have. I have to say I think your industry is a bit misplaced! In the first place, the sort of program you're writing is hard to debug; CIA2 may, for example, be generating NMI interrupts (see p.127 of my book); or your maths routines may have errors. In the second place, the interrupt routine doesn't last a fixed time; a keypress, or multiple keypresses, send the routine off throughout the ROM.

Try this simple program or something like it: 0INPUT "INTERRUPTS/SEC";T: TT=1000000/T: HI%=TT/256: POKE 56324, TT-256★HI%: HI%: LIST which sets the IRQ timer to generate the requested number of interrupts per second. You'll find the 64 can handle over 30000 interrupts per second. Generally, the 64 spends less than 1% of its time of interrupts.

128 and 64 COMPATIBILITY...

Dear Rae,
'I've purchased a 128, one of the major reasons being that all 64 games were absolutely compatible with my 128.

However, I have a game called 'The Double' which loads perfectly on the 64 but on the 128s at my disposal I get a black and white screen.. the reset switch flips on the game for a spilt second..'
D. Cole, RAF Laarbruch.

Yes. The 128 in 64 mode (you don't say so, but you must know that 64 mode on the 128 needs, for example, GO 64?) isn't absolutely compatible. One difference is in its VIC chip, which has an extra register tacked on the end which sets the processor in fast mode, switching off the screen in the process. It may be that your game alters this register, in which case there's little you can do except disassemble the whole thing and look for the relevant code.

Since there are loads of other games for the 64, I'd suggest using them instead.

BUSINESS QUERY...
Dea Rae,
'I'm interested in buying either a Commodore 128 or an Amstrad 6128. My intention is to use it for computer records. I require a program that keeps ledger sheets for about two hundred debtors, seventy creditors, a cash book and bank balance...'
Pierre Debrincat, Malta.

I'd suggest you enquire about Microclerk, a program for the 128 available from JCL Software, of Tunbridge Wells, Kent. This could be just what you're looking for.

Dear Rae,
'Your magazine's excellent Printer Enhancer program (Nov. 86) unfortunately has several print symbols I cannot decipher, on lines 100, 60235, and 60285. How should they be entered?'
Ivor Gertler, Acton.

As I've mentioned before, programs listed on daisywheel printers, or non-Commodore compatible dot matrix printers, can't manage Commodore's graphics character set. Often these are drawn in by hand, and can be hard to decipher. However, only a few occur often (except in some graphics programs), chiefly the 'clear screen' and 'home cursor' characters. All these show up in print statements within double quotes. Try pressing " followed by, say, the HOME key if you're not sure about this. 'Reverse on' and the colours need the CONTROL key to be pressed too.

Dear Rae,
'I get an 'out of memory' error on line 130 of your 'Printer Enhancer' program. It is frustrating! Please help!'
V. Brooks, London SW1.

The line is 130 DIM BO(490),TP (490), CT(490),CB(490). Four very large arrays are being defined here. My book 'Programming the Commodore 64' (Enquiries: Biblios, on 0403-710971) in its section on storage of variables shows that each of these arrays takes up 2462 bytes, so four will need nearly 10K of memory. You may simply have lengthened the original too much, e.g. with REM statements.

To cure this problem, add line 129 PRINT FRE(0): END which will stop the program after telling you how much space it has just before the arrays are set up. You can then trim your program to fit.

Another approach is to use integer arrays (i.e. BO%(490) and so on; these take less than half the space — provided, as seems to apply here, that each element of the array is an integer, between about -32000 and =32000.

INTERRUPTS!

Dear Rae,
'I've been trying to get a sprite to travel across the 64's screen whilst still being able to type commands in Basic. Please explain interrupts before I go mad trying.'
M.A. Smith, Bures Suffolk.

There's simply not enough space to explain fully. The idea is that, with near-absolute regularity, the 64 stops what it's doing every fiftieth of a second and looks at the keyboard, the tape ports, and a few other things. This is called a 'background' program. To add your own extras to it, you'll need to know machine language, and how to write you own extra interrupt routines.

I'd suggest you read my book; page 272 has a detailed breakdown of what to do, and the techniques can be used, like polling, the uses of clocks, and the use of special locations to activate background programs. For a newcomer, stick to IRQ interrupts; the 64 uses non-maskable interrupts (NMIs) too, but it's best to stick to one type.

My book has plenty of examples, e.g. to read joysticks, and a music reading and playing program which is timed by interrupts.

As a simple taster, try POKE 56235,3 or 2. This speeds up the interrupt rate so much that screen editing becomes difficult. A smaller value, such as 1, slows basic bery noticeably (try LIST), since there are so many interrupts.

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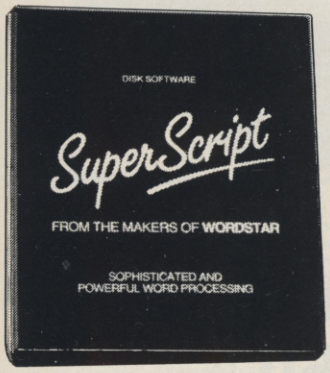

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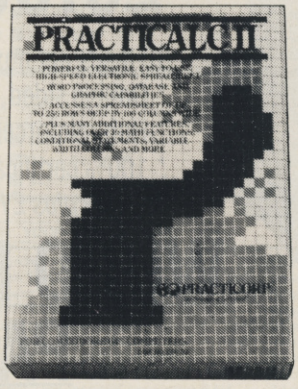

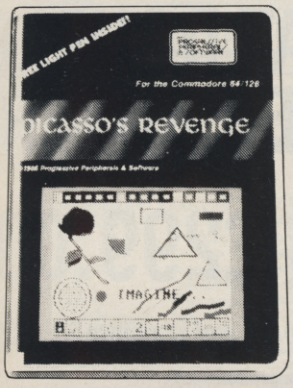

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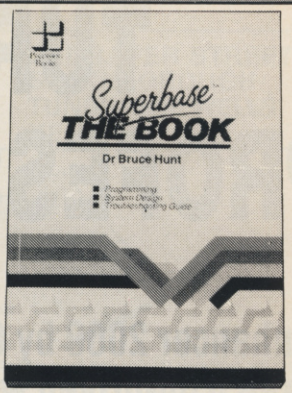

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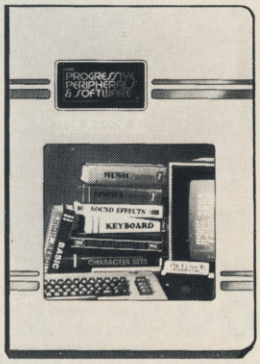

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VOICEMASTER

By ANCO

It is quite a time since a full sound package emerged for the 64. And, in fact, that still goes as true. For THE VOICEMASTER is not as new as it might seem. It is a US development that appeared early last year in the United States and has been talked about ever since in other countries with a kind of desperate longing. A few copies arrived, slightly smuggled and its fame spread. ANCO themselves have been promising for some time — waving bits of tempting information in front of our anxious noses, as if to inflame our ravenous appetites for what promised to be a very interesting development in a field — sound — where all too rarely these days is anything new to be seen or heard. Personally I suspect that VOICEMASTER itself goes back longer than just 1986 and was an earlier product that has been improved. Anyway, at least it is here and ANCO were kind enough to get CCI the first real look at it. There are some consolations for working on a magazine that everybody believes is not biased!

The VOICEMASTER arrives with both disk and cassettes. 2 cassettes marked Version 4.0 which is what leads me to think that this is an improved rather than brand new product. It takes quite a while to get to 4.0 of anything! It also contains hardware — the necessary leads and plugs etc, earphones and a flat box-shaped Speech and Music Processor. There is also a comprehensive 44 page instruction manual that you will have to read once and then to which you will frequently refer.

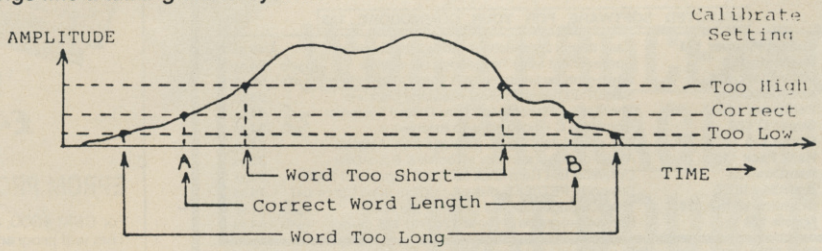
If you are new to VOICEMASTER style product you will probably wish to experiment with some of the many demonstration programs contained on the VOICEMASTER disk or cassette, such as a talking calculator, blackjack game, and others.

The VOICEMASTER disk contains essential utility software as well as a number of demonstration programs. It has three main functions, speech recording and playback, word recognition, and music writing from voice input. But to do this best you will need a separate manual. Speech recording and playback can be had in combination with word recognition so as to implement a two way dialogue with the computer. A speech recording can also be modified with forms of editing to improve quality and intelligibility on playback (or to create sounds not like those recorded).

Cut and Paste

VOICEMASTER may find its greatest use in recording speech for later playback. VOICEMASTER hardware is not required for playback from pre-recorded vocabularies. High quality speech can be realized with various forms of editing. There are different variations of the ANCO speech editor. The one contained on the VOICEMASTER disk is an amplitude editor. A more sophisticated version which allows "cut and paste" operations with time slices in the millisecond range as an option. (It is called "Speech Construction Set".)

The VOICEMASTER manual asks you, more or less, what you want to do. It makes certain suggestions (and then tells you how to do something) but the options it provides are really limitless. You can do simple things like make a talking keyboard or a talking cash register or go onto more interesting things like a talking alarm system.



Effects of Calibration Setting

All of these ideas, as it is careful to point out, need some familiarity — though by no means much expertise — with Basic. You will have to type in little programs to be able to achieve exciting results.

And you certainly can do some amazing things. Amazing when you consider what it would have cost only a year or two ago to get this sort of thing done professionally — and now for £59.95, you can do it yourself!

For example, you can get the computer to talk back to you in what approximates to your own voice. It will obey your spoken commands (Not all of them! you have to be careful what you ask it!). It will store up to 64 sounds in memory and let you add speech to your own programs. It has a user definable sound sampling rate and it includes a graphics based speech editor for making up your own sounds.

It will recognise 32 words or phrases initially and you can add more words yourself and it will, through its "Musical Harp" software, convert the pitch of the human voice or other sounds into musical notes up on the screen. And it will then let you print out your "composition" (and it may sound and look very odd indeed!) onto a dot matrix printer.

It has some special options for the more advanced computer musician: it has software drivers for MIDI; machine language source listings, voice activated macros and its high quality "cut and paste" system — "Speech Construction Set" — lets you create your own electronic speech.

This is a package that will certainly appeal to anyone who has an interest as yet unsatisfied in developing the sound capabilities of a 64 — and as everyone knows, they are enormous and just waiting to be exploited. It is not a little toy you can pick up and jump straight into being an expert without even reading the instructions. It is not a shoot 'em up game level piece of goods. VOICEMASTER is a fully usable speech and music processor and for the money it is first class value and it will provide an excellent introduction to the magic world of computer sound and music.

A.M.

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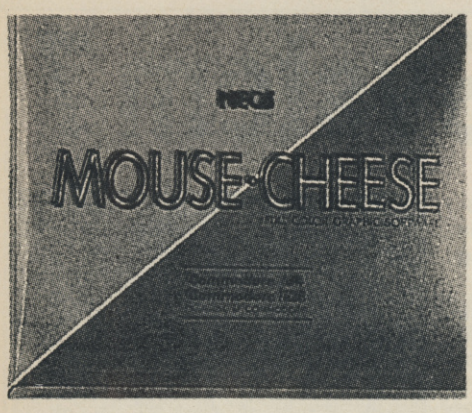

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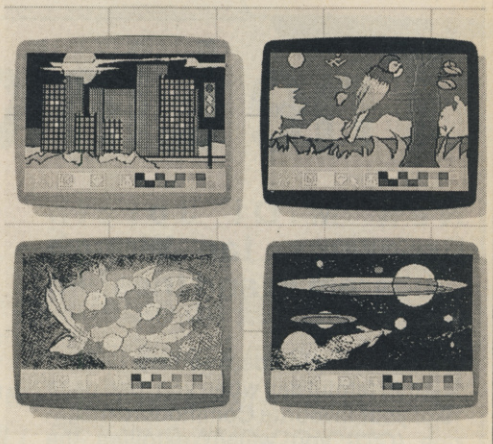

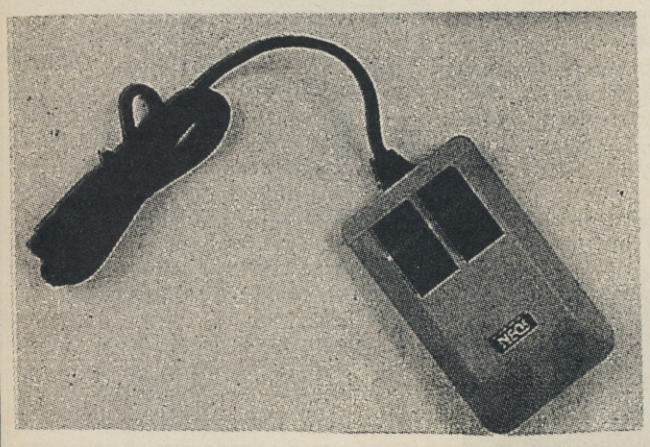

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The Linker and System 7

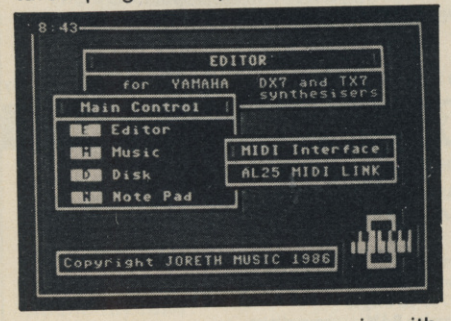
New MIDI Joreth Programs. Ian Waugh plugs 'em in and tries 'em out.

Cast your mind back to May 1985, to that fateful day when you read page 19 of your favourite Commodore magazine (CCI, you wally!) extolling the virtues of Joreth's MCS (Music Composer System).

The MCS was — and still is — a remarkable piece of MIDI software not least of all because it contains real- and step-time sequencing in one package. Both methods have their advantages but many musicians have a penchant for one or the other. Joreth's Linker was designed after receiving feedback from real-time aficionados.

The Linker is a stand-alone package which effectively replaces the real-time part of the MCS. Its task is to link sections of music together; a task it takes very seriously, too, as it can store up to 8 tracks of sequences each containing 16 links.

The linking of sequences is not restricted to sections of music; indeed you can dive down into MIDI and link a sequence of bytes. There is provision for gotos (one in the eye for the structured programmer) and repeats. You



can cut and paste your music with greater precision than was ever before possible.

If you have used the MCS, you need to make a small mental adjustment when using the Linker because you now have not only Tracks, Parts, Tunes and Songs but also Links and, in the Linker, Parts take on a slightly different meaning. It takes a little getting used to but, like all Joreth's software, it is very comprehensive and a little time must be spent to become familiar with it.

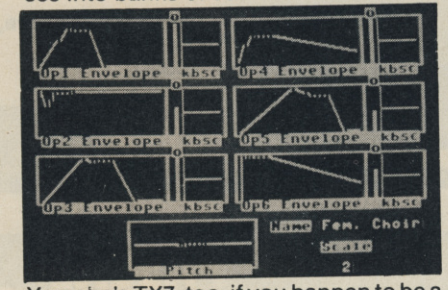
To help you on your way, the Linker manual contains a 10-page tutorial which takes you step by step through a typical link process.

The Linker is ideally suited to producing tight arrangements but I also used it to construct a 'composition' from random sections of a few bar's improvisation. Perhaps rather a frivilous use of the program but I'll bet no other sequencing package has been used in this way!

If you prefer real-time sequencing and this degree of control appeals to you then the Linker could be just what you need.

There can be few more disheartening tasks facing a digital synth owner than programming his instrument. All parameters must be adjusted with only a couple of buttons and maybe a slider. That's the problem with all digital synths but Yamaha's DX7 just happens to be one of the more versatile — and that means complicated.

Joreth's System 7 helps you program the synth and it helps organise the voices into banks of sounds. It works with



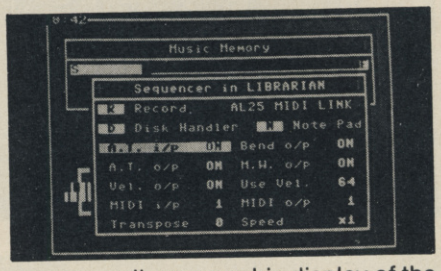
Yamaha's TX7, too, if you happen to be a fortunate owner.

The program has three main sections: the Sequencer, the Editor and the Librarian. In the Sequencer you can record a short piece of music which will play while you are editing voices so you can tell what the sounds will be like 'live'.

The Librarian lets you create, organise and store banks of 32 sounds. This works directly on files created on disc but there is also an internal file within the computer's memory which is used to transfer voices to and from the synth. You can give voices new names and a Note Pad facility lets you jot down details of the files. At first sight, the Librarian appears a little complex but this is a result of its versatility and flexibility — bywords in Joreth software.

The Editor is where all the hard work is done — or rather it tries to take all the hard work out of the job of editing. The screen is divided into two sections: functions and voice parameters and all parameters are displayed numerically on screen.

The Editor has thoughtfully been supplied with lots of ways to make the job easier. You can turn operators on and off and copy one set of operators parameters to another or exchange them. You can get a graphic display of the algorithm (this is all DX talk, by the way, in case you don't have one) and

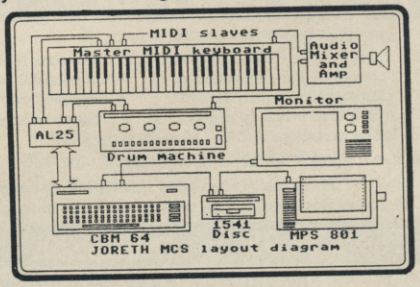


you can call up a graphic display of the operators' envelopes, output, keyboard scaling and pitch.

The disk handling routines are very impressive with lots of helpful messages. A separate card contains a summary of all System 7 operations and the disk itself holds lots of help files. System 7 is quite a complex program but a little time spent with it will be well rewarded. Like the Linker, it too has a Beginner's Guide and, like the Linker, yet more information would still be welcome.

Part of the program leads to a small puzzle and the first three people to solve it wil receive a free Linker. Once solved, you end up in a random voice generator. It's not terribly sophisticated, crammed into 1K of code as it is but it's a nice little extra and I spent hours playing with it. 320 (non-random) voices are also included on the System 7 disc.

With all this going for it, System 7 is a pretty impressive piece of software and I would suggest it is indespensible to the DX7 and TX7 owner. Nicely priced, too. You don't have to be a DX whizz kit to use it and once you do you'll wonder how you ever managed without it.



Both System 7 and Linker are compatible with Joreth's excellent AL25 MIDI Interface — if you are particularly interested in synthing equipment, check this out. Joreth programs will also work with cartridge port interfaces such as Siel, Jellinghaus, Microvox, Steinberg and Sequential so you've no excuse for not buying one!

Prices: AL25 £138, System 7 £79.99. AL25 plus System 7 £199.99. Linker £94.90. AL25 and Linker £219.65. All prices include VAT.

Contact: Joreth Music, PO Box 20, Evesham, WR11 5EG. Tel: 0386 831615.

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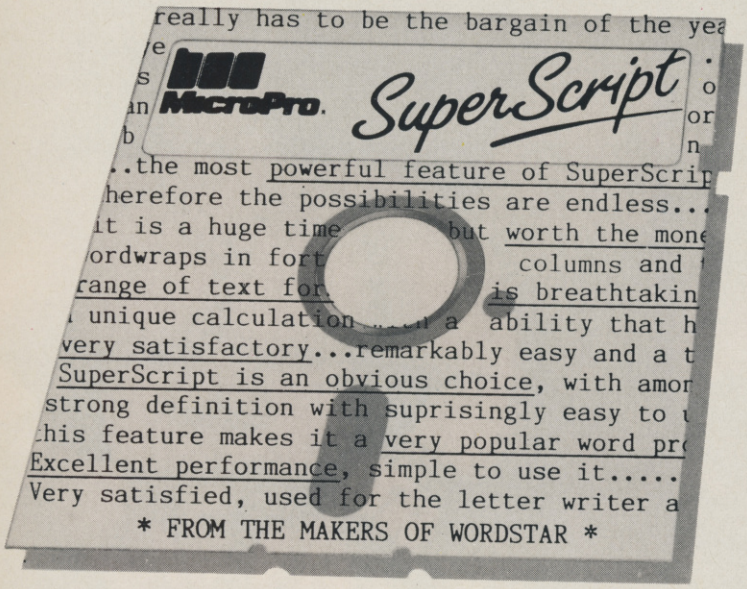

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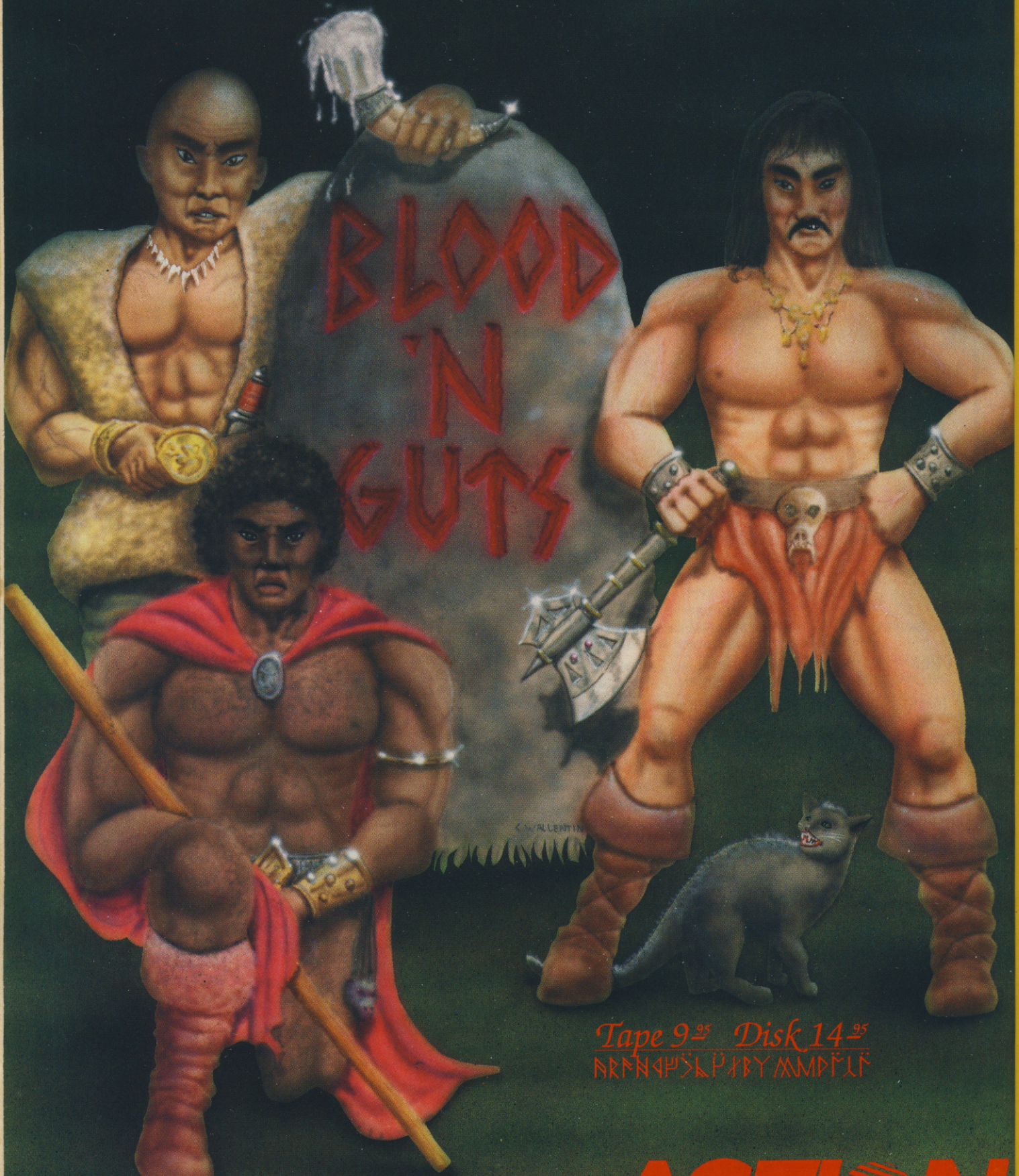

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Konami's European Software Manager, Luther de Gale, represents his company the way a Samurai warrior might protect and advance the cause of his feudal Japanese lord — with strength, sharply-honed skill and with total confidence in himself and in Konami's destiny.

"I expect us to be one of the big four. An Ocean, a US Gold..." He says with the certainty of one who has seen at close quarters the capacity for planning, execution and global success of Japanese industry. When he describes the record Konami has achieved in its seventeen years of existence, his confidence seems very likely to be justified.

Konami is, of course, already one of the big four — not of home software but in arcade games, not cassette shoot 'em ups but the real thing; the stand up arcades, the draughty, grubby, swallow-your-pocket-money, crowd-around-to-see who-gets-top-score arcade machine games. Atari, Sega, Nintendo and Konami are names that have become legend. For Konami to move to supplying home computers with versions of its worldwide arcade success would seem an obvious step but, as Luther de Gale points out, it did not happen easily or quickly. Konami was started by four Japanese men — the KO comes from Kozuki the name of the original founder. It began as an organization to service Japanese arcade machines. Not a very comfortable choice, for the whole field of arcades was then influenced if not dominated by the Yakuta, Japanese Mafia style gangsters, who shared control of the post WWII entertainment field with Americans. Konami moved from repairing arcade machines to creating the PCB's (Printed Circuit Boards) that went into them. Not the actual manufacture of PCB's but the 'intellectual property', the creation of the game to which these high-powered often 32 bit computer boards are dedicated. Futurists have predicted that we are moving into 'a knowledge based society' where you will sell technological expertise more valuably than manufactured products. Konami are a good example of this. They develop an arcade game, sub-contract the production for the PCB, then distribute them round the world to be fitted into the almost universally uniform stand up arcade machines and sit back to watch the yen, dollars, pounds, marks, francs etc roll in.

Well, not exactly sit back. For that is where Konami UK and Luther de Gale come in. After Konami's early success with games like Ping Pong and Track 'n Field sports simulations, they decided to join the major Japanese electronics companies move into the home computer business based on a single standard — MSX. MSX... ah yes, not one of the great Japanese success stories so far. With a mere 2% to 3% of the software market today, it tails far behind Commodore and Spectrum. However, Konami, unlike the Sanyos, Sharps and Toshibas has made money out of MSX. It was not fighting for a share of the small, highly competitive hardware market. It sold the relatively expensive MSX cartridges — many to those very same Sanyos, Sharps and Toshibas to bundle with the machines. Konami also supply cartridges for the Nintendo 'Family Computer' — really a games console. 'A major portion of our revenue in Japan' de Gale comments.

Influential Role

Luther de Gale took an influential role in the next step for Konami which was the result of the question 'If we are in the computer software business, why are we ignoring 97% of that business?' — the cassette and disk based home computer market. As they had no shortage of games already developed — after all that was Konami's business, they decided they would licence these games to already established games software houses. They picked Ocean. De Gale states 'Ocean have done a good job for us. They have been 'the Konami of Europe'. Ocean have had a number of Konami successes including CCI's 1986 Osker winner the 'Konami Coin-Op Hits' Compilation. Now Konami is moving to the next stage of its operation. The publishing and marketing of its own games. It has set up a company to develop products using the Konami label run by Luther de Gale from West London.

As de Gale points out it has great advantages. "I have secured source of product. Konami has in Japan 140 full

KONAMI

MARKET LEADER-KONAMI CONT.

time programmers — specialists all of them. Some do nothing but sound..." This is probably one of the largest game development teams in the world, if not the largest. It makes UK companies even like Ocean look very small.

"When we launch a game it gets market awareness — worldwide". They deal in large figures. "We sold a million Nintendo last Christmas — 50,000 in the US alone." That means that a Konami game that is already a hit in the arcades will have had huge publcity. "Originally there was a fear from arcade owners of affecting their trade but arcade games last three months and it would take me at least three months to develop the home computer version..."

Jailbreak

De Gale's team in the UK is now about 15 strong to take care of current projects but will probably have to grow. The first release under his control has been Jailbreak which has topped the Micro Dealer Chart. A typical arcade style shoot 'em up with not much story but fast exciting action, it is clearly a game that will rate high for the home computer arcade fan. Next on the list is Nemesis, just being released. De Gale sees his job to develop a top team of young, creative programmers. Simon Pick, the programmer of Nemesis is typical of the breed. 20 years of age, a student in Computer Science and Artificial Intelligence at Sussex University he already has games successes behind him, including the well regarded 'Mad Nurse' which came out on an economy label "That took me two weeks" he told CCI, "I've spent more than seven months on Nemesis, getting it right". Nemesis, from the first look CCI got of it, seems superior even to Jailbreak, the kind of game that would get stand up arcade fans pouring their money into the machines. General opinions are that it looks like Konami has got a hit with Nemesis. But de Gale's plans for Konami are based on more than a few isolated releases. He intends to build the Konami name into a major force with backing from good customer relations from such things as a Konami Club, a newsletter, a telephone service for queries etc. He wants to show it is 'a company that cares'.

If that has the familiar Japanese corporate togetherness ring about it, it may be thought strange coming from a Londoner of West India origin. But Luther de Gale must now include some Japanese characteristics in his British personality — private as well as professional. He speaks Japanese, learned both at London University (where usefully for someone involved in a big company he also studied politics) and in Osaka in Japan. He is also the UK's leading expert on Nippon Kempo (Japanese Boxing). When he went to Japan, it was to study Karate but found a less common form of martial art. Nippon Kempo is a sport that requires the protection of gloves, solid black leather breastplate and a helmet which looks fearsomely like those used in American football.

De Gale brought back his enthusiasm for Nippon Kempo and there are now more than 300 people of the association who follow the sport in the UK. "It includes all styles, kicking, throwing and punching" says de Gale. He does not look the kind of man to confront without that breastplate and helmet well in place.

He admits now he has little time to play computer games. He leaves that to others in his organization. He sees Konami producing its games across all the formats even the less general like the C16. Stretching still further into the future "The ideal is to develop Konami UK as a software company in its own right but also including third party software... We are going to move away from the days when every software developer could be a software marketing company.'

He comments, 'In the West, individualistic and creative talent likes to be independent but he sees that quality being successfully combined with Konami's corporate strength. His view of the main home computers? "Our established medium, the 64 and the Spectrum, will be around for a long time yet — at least the next two or three years. For Yuppies, there may be a PC market but I'd be very wary of it... Yuppies like to show off at dinner parties, not to be confined in front of a PC . . . I still see the market as the 'annoying little boys' who phone here, who touch everything at exhibitions..." And the future? "What I set out to do was to create Konami as a software house. I had a lot of patience..." He gives the sense that no less strength and patience will be used in building itup to be 'one of the big four'.

Strength, aggression, patience... Konami reflects the longer term view of Japan of how to achieve and retain success. Luther de Gale has clearly learned and absorbed those formidable qualities. As a combination, they will be difficult to defeat.

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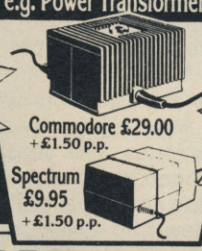

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'The Cult Of Information — The Folklore Of Computers & The True Art Of Thinking' by Theordore Roszak — Lutterworth Press — £12.95

We are being manipulated. By whom? By the information communicators, says Theodore Roszak. In his book 'The Cult of Information', (Lutterworth Press. £12.95), he catalogues chapter and verse of his theory that the computer scientists are slowly and invidiously contriving to make us believe that the computer is an all-powerful god. If they have their way, says Professor Roszak, mankind will eventually defer to the computer in all things and will forget how to plan, dream or even think for itself.

The burden of his argument is that there is a 'vital distinction between what machines do when they process information and what minds do when they think'. That distinction, he says, must be kept in view by teachers and pupils alike, for it must be remembered always that the computer is our servant, it must never be allowed to become our master.

We have had the Ages of Faith, Reason and Delivery, now we are living in the Age of Information and what can communicate information better than a computer? You sit in front of it, press a few buttons, and lo! you can speak to someone in an office halfway across the world. But you can do that just as well on the telephone, argues Prof. Roszak. What he seems to forget is that, at the same time as speaking with someone thousands of miles away, facts and figures can be displayed on the small screen and, very often, showing can be far more memorable than just telling.

Your children can play video games which stretch their imagination, but board games can do that just as well, he adds. And as for the graphics . . . (and why paint pictures with graphics, complains the author, when a paint brush can do it so much better!), he finds these are 'aesthetically degraded, even ugly . . . an eyesore'. I suppose beauty IS in the eye of the beholder but it is precisely these pictorial animations — imperfect though they yet may be — that make computer games so attractive to the young, and not-so-young, alike. Even 'Trivial Pursuit' — one of the most successful board games ever — has been produced as a computer game and, in that form, is perhaps even more addictive.

As befits a Professor of History and Chairman of General Studies at California State University, Theodore Roszak propounds his arguments logically and with a wealth of facts and figures. For example, he has discovered that 98% of all British schools are microcomputerized, that by the mid-1990's it is estimated that the ratio of pupil to computer in schools in the U.S.A. will be one-for-one and that an astounding $40 billion dollars was spent on electronics by the Pentagon in 1985. He is naturally worried that the surfeit of computer software and the so-called 'information' it churns out will mean that mankind will stop thinking for itself. That all we need, (or think we need), in the way of knowledge will be programmed and available on a screen.

Erudite and informed as Professor Roszak is, I feel that he is underestimating his fellow man (or woman). The brain which can invent the computer will always be able to control it. There will, inevitably, be some who will fall foul of the 'information cult' and believe anything they see on the computer screen, (just as there are some people who believe that soap-opera characters really exist and are not just actors playing a role) but, conversely, there will also inevitably always be the maverick, the loner, who will look at that information and say 'Why?'

Therein, I am sure, will lie our salvation.

D.M.

Lutterworth Press, 7 All Saints' Passage, Cambridge CB2 3LS.

The Micro-Chip, The Story Of A Revolution & The Men Who Made It — T.R. Reid — Pan Books —£3.95

Have you ever wondered why fixing computer problems is called 'debugging'?

In 1944, the University of Pennysylvania had one of the first important digital computers, called ENIAC, whose 'tubes' (valves) had an unfortunate tendency to 'blow' at the most inopportune moments, such as when the U.S. Army was trying to compute artillery trajectories. The cause of the trouble, very often, was moths who were attracted to the soft lights of the tubes. The 'bugs' flew into ENIAC's innards and short circuit the works. Hence, fixing it was called 'debugging'.

This little gem of information, plus many others on the subject of computers and their components, comes from this down-to-earth exposition of the invention of the silicon chip.

Not one but two men were responsible for the micro-chip. Jack St. Clair Kilby, an electronics engineer, worked for Texas Instruments and, strangely for one who has pioneered the most modern of technologies, he won't hear a digital watch and doesn't use a computer because he 'doesn't know how'. Robert Noyce, a theoretical physicist, was the other. His colleagues call him 'the Mayor of Silicon Valley'. He is also now reputed to be worth upwars of $100 million.

But the book doesn't only tell the stories of these two men, it spans a century and a half of scientific inventions, showing how other discoveries led to the creation of the 'chip that changed the world'.

Reid gives background histories of the men who made it all possible — from Thomas Edison to Kilby and Noyce — fascinating little stories such as why the 'papparazzi's' favourite phenomenon is something called 'static cling' or why the inventor of the solid-state transistor particularly hates rock and roll.

If you'd just like to expand your knowledge of the silicon chip, its origins and its future, without being buried or bored by a mass of scientific jargon, then this is the book for you.

D.M.

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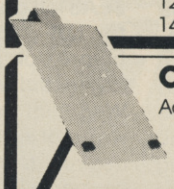

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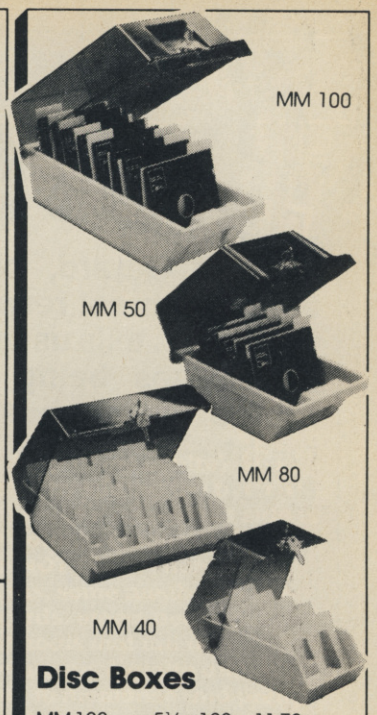

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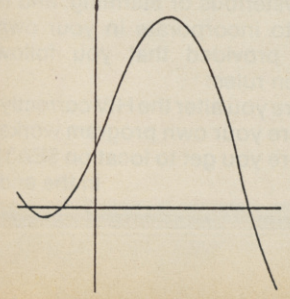

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C64 POWER

Commodore 64 Interrupts

Peter Gerard, one of the U.K's most respected 64 experts tells us that the 64 dislikes being interrupted as much as you might — and what to do about it.

One of the most often used features of the Commodore 64, at least in commercial programs, is something known as the Hardware Interrupt Vector. This is a convenient way of allowing two or more things to happen at what appears to be the same time. The 64 isn't a multi-tasking machine, unlike the Amiga, and so this is only an illusion, but by careful application and the speed of machine code this illusion will be all but transparent to the user. All very well, but what exactly is the Hardware Interrupt Vector (HIV from now on), and how do you, the poor person at the other end of the keyboard, use it in your own programs?

According to the concise Oxford Dictionary, a vector is a quantity determining the position of one point in space relative to another. Put more simply, and in Commodore 64 terms, a vector is some region of the 64 that tells it where something else is going on. Interrupts? Well, you know as well as I do what an interruption is, and indiscriminate interrupting annoys Commodore 64s just as much as it annoys humans, which means that we do have to tread carefully when invoking this feature. Hardware, of course, is the 64 itself. Putting them all together means that in some memory locations within the 64 there is a vector which points to some other memory locations which continually interrupt the computer and, in the case of the HIV, continually update such things as internal clocks, for example.

Now then, if we were to alter this vector we could set up our own program which would interrupt the 64 before it was intended to be interrupted. Provided that we then sent control off to the proper interrupts, all should be well and good. Let's see.

Vectors

On the Commodore 64 the HIV occupies two locations in memory. That's all it needs to occupy, since the 64 can only address 64,000 (all right, 65,536) bytes of memory, and any two consecutive eight-bit hexadecimal numbers can quite easily cope with that. Pardon? Oh, that's another article. Talk to the editor nicely.

The two locations in question are 788 and 789, and if we PEEK them with the standard PRINT PEEK(788) and PRINT PEEK(789) commands we will find that on power-up they contain the values 49 and 234. A quick conversion to hexadecimal turns that into the numbers 31 and E4 respectively, and in the time honoured tradition of the 64 we must turn those numbers around in order to get the address of a location in memory. Doing that gives us of course the number EA31, and a glance at a memory map for the 64 will tell you that starting at location $EA31 there is indeed something called the Hardware Interrupt. The vector has done its job, and every sixtieth of a second control of the 64 is diverted from whatever it happens to be doing at the time to that memory location, before returning and getting on with the job in hand.

Now, you may have noticed that the two locations 788 and 789 are in RAM, not ROM, and so to alter them all we need to do is use the POKE command. Don't do it yet! We haven't yet got a program sitting anywhere in the machine that will allow us to interrupt the 64 without causing complete and utter chaos, so, consider the following program:

```
10 FOR I=49152 TO 49283:READ A:POKE I,A:B=B+A:NEXT
15 IF B()21187 THEN PRINT "DATA ERROR":STOP
16 POKE 788,0:POKE 789,192:END
20 DATA 165,197,201,4,240,47,201,5,240,25,201,6,240
30 DATA 3,76,49,234,98,192,234,234,234,234,234
40 DATA 174,33,208,232,142,33,208,76,49,234,32,98
50 DATA 192,234,234,234,234,234,174,32,208,142,32
60 DATA 208,76,49,234,76,113,192,234,157,0,216,232
70 DATA 224,255,208,248,162,0,157,255,216,232,224,255
80 DATA 208,248,162,0,157,254,217,232,224,255,208,248
90 DATA 162,0,157,253,218,232,224,252,208,248,76,49
100 DATA 234,162,0,160,0,200,192,255,208,251,232,224
110 DATA 60,208,244,96,174,132,192,232,142,132,192,138
120 DATA 141,134,2,32,98,192,162,0,76,56,192
```

Type it in and PLEASE save it (tape or disk, it doesn't matter) before running it. If you find that the program halts with a "DATA ERROR" message in line 15, then check every data line very carefully: there is an error somewhere. However, if all is well then line 16 will be invoked and the HIV has now been altered.

If we look at line 16, we'll see that the values 0 and 192 have been POKEd into locations 788 and 789 respectively. Converting those numbers to hexadecimal gives us 0 and C0, and turning them around as before gives us the memory location $C0000: this is where the vector is now pointing at, and every sixtieth of a second control of the 64 will now go to that location BEFORE going to the one mentioned earlier, namely $EA31. It does get there in the end, it has to, but it performs our own routine before doing so.

How did we decide on location $C000? Well, that is the start of a block of 4K's worth of spare memory in the 64, and in decimal terms starts at location 49152: hence the loop in line 10. This means that we don't eat into the 38,911 bytes available from BASIC.

And what, precisely, does the program do? Not very much really, but you could use it in a text-only adventure game, perhaps. I've written games before now that have been criticised for the choice of text, border and background screen colours, and even the mighty Infocom are less than superb in that area, using the power-on colours for many of their earlier games. So, providing that nothing else in the program uses interrupts, or ends up at location $C000 onwards, then this program will keep the critics happy. Pressing 'F1' changes the colour of all the text on the screen, 'F3' changes the border colour, and 'F5' changes the background screen colour. If you're a machine code programmer you'll be able to figure out how it all works, and if you're not it would take too long to go through: suffice it to say that it performs the task it set out to perform.

The rate of change (which you'll note if you keep your finger on the key rather that just tapping them) is determined by the value in location 49261, which currently contains a 60. You can alter that by POKE 49261,1 (or whatever: use any number from 0 to 255) to see what difference it makes.

Conclusion

Finally, to prove that the 64 still functions as normal (well, nearly) I ran a simple program and timed the difference in execution time. The 64 is running approximately 1.47% slower with the HIV altered than it is with the HIV pointing to where it should be pointing. And if I could function at only 1.47% slower than normal every time the telephone rang, I'd be a happy man.

To conclude, the use of the HIV is nothing mysterious or alarming, and is very easy to incorporate in your own programs, provided that you follow three golden rules:

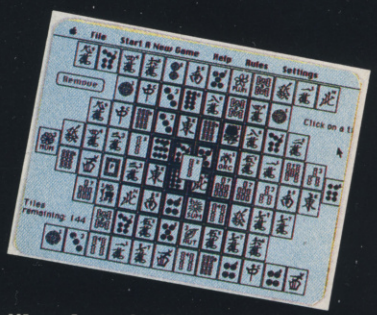
1) Make sure you alter the HIV correctly.
2) Make sure your own program works!
3) Make sure you get to location $EA31 in the end.

P.G.

C64

MEGA SHANGHAI

上海



Activision

In these days of the mass-market rip-off, support by huge advertising, misrepresentative packaging, and not a small amount of muscle in the sales and distribution dept, it is astonishing and heartening to see one label still committed to originality. That lable is Activision. Like them or not, it was clear that 'Alter Ego', 'Little Computer People' and 'Hacker' (I & II) all demonstrated an interest in game-design and entertainment value that far exceeded the commercial interests which normally controlthe games' world. Thus, while most UK labels are gambling how close they can get to 'Nemesis' in their next release without being sued, Activision hit us with another intriguing and sophisticated game I can recommend unreservedly.

Shanghai is a version of Mah Jongg, a Chinese gambling obsession that pretends to be a board-game. The real-thing is a noisy, complex and expensive pastime that keeps half the Oriental population of London up into the small hours, usually at the expense of their Western neighbours. The computer version, unfortunately, is a good deal simpler. It is a pity like so much of their production, unlikely to make it into the list of top chart sellers.

144 tiles (a bit like Dominos) are arranged in a random pyramid shape (viewed from above and up to 5 tiles deep in the centre). You remove tiles by sliding them left or right, so if the stack on either side is the same height or higher, the tile is declared 'NOT FREE'. There are several suits, some numbered like playing cards, others bearing unique symbols that fall into character groups that are almost impossible to memorise and pretty hard to make out on screen. The base object is to clear all the tiles away, two at a time. You do this a bit like playing 'snap'. Simply put the cursor on one tile, and then on the one you think it matches. At this time the tiles will either be removed or you will be informed that they were 'NOT FREE'. If you get stuck there is a 'reveal' icon which will almost certainly show you some pairs you may have missed.

There are several variations to the game, which can either be played as Solitaire or against friends in a Tournament — you can even put a time limit on your moves. The computer never acts as a player, only as a Judge, and games can be drawn-out affair that may or may not be to your liking.

I found Shanghai about as absorbing as Patience and thoroughly playable. The Problem is that I only play Patience when I'm suicidally bored or too ill to watch the TV, and I fear Shanghai suffers from the same malady. It's simply too 'personal' to use the qualities (ie; sound and vision) that you normally switch on a computer to find. Alas I can't really see it selling in large quantities, but my rating reflects the encouragement Activision should receive in their pursuit of new angles. If I really thought my '64' was doomed to endless versions of Commando, I'd sell it now — Activision is one of the few reason I don't.

T.M.

Price: £9.99
Graphics: ★★★
Sound: ★★★
Playability: ★★★
Rating: MEGA

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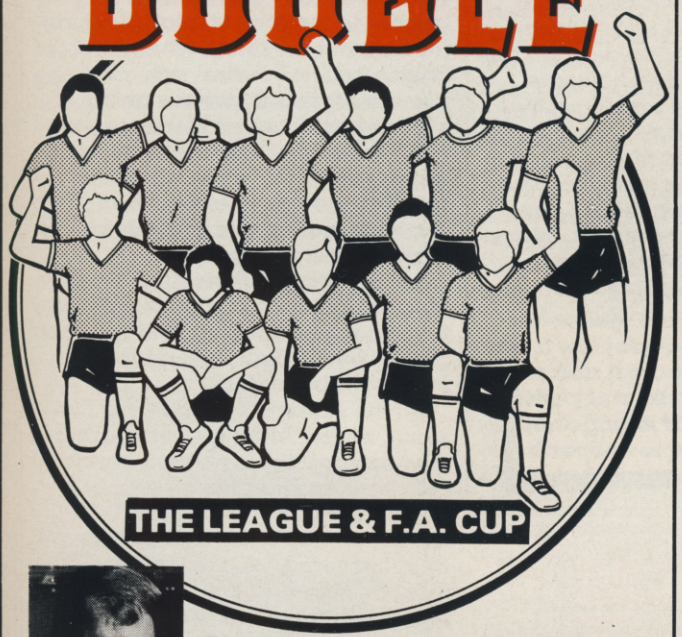

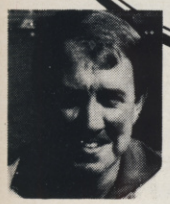

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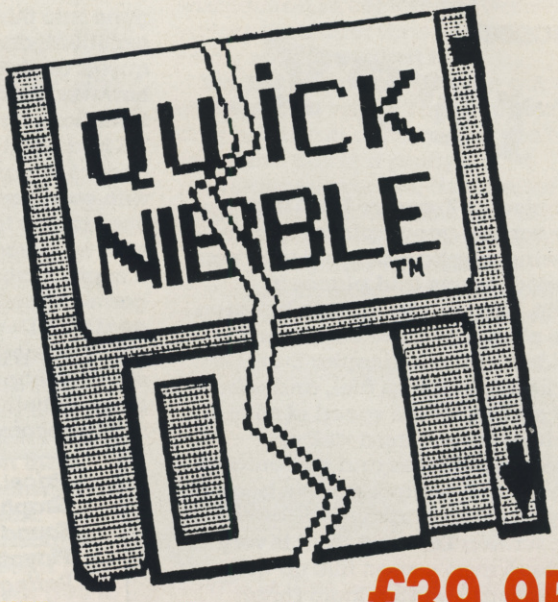

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Treasure Hunt — Macsen

IFTY

The object of Treasure Hunt is to solve various geographical quests, following cryptic clues that take you to various towns and places in Britain. You may fly or walk between these places and are conveniently provided with a helicopter that has apparently limitless fuel, and seems to fly at roughly the speed of sound. Which towns you must visit are hidden in the clues and you unravel them using a comprehensive booklet of geographical notes.

On screen, Treasure Hunt is very simple. A map screen fills up with locations as you visit them (often overwriting itself quite badly), and a helicopter screen shows (text only) where you are, what the current clue is, and how long you have left to solve it. You are asked for simple commands (usually the name of the place you wish to visit, or the direction you want to walk in) and it obeys with an 'OK' message or a 'well done' if you are on the right track. The interpreter seems to have minor bugs, telling you some locations don't exist when they do, and Annika Rice, who used to run around a lot like an idiot, shouting a lot and shoving her bum at the camera in the original T.V. show would have been delighted with a

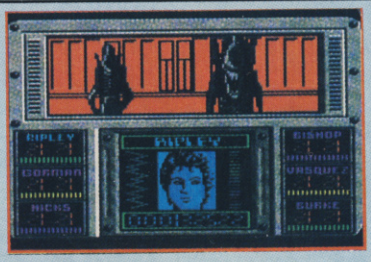
helicopter that miraculously appeared even though you had strayed miles away from it, whenever you said 'Take Off'.

All the real action involves searching your notes for information that will suggest your next location. Once you have this, you simply tell the computer and you are taken there. In actual fact this was an intriguing little process, and if the game had been a little friendlier I might have played a little longer. Unfortunately as you can't abort a quest you're stuck for quite a while each time you run out of ideas, and the stupid little tune that can't be turned off drove me quite barmy in the meantime!

It's clear that a lot of work has gone into this. The notes are excellent, and there are several quests on the tape. It would seem however, that Macsen's good intentions have come to very little. If TH had been an Adventure, with a decent interpreter, or a Simulator with even passable graphics and the opportunity to map and navigate your way around the problems, then it might have been a very good game indeed. Unless Macsen sign a deal with Denton's or someone with equal games-style expertise I can see little hope for Eastenders, or any other of their future TV licenses really becoming chart toppers.

TM

Price: £9.95
Graphics ★
Sound ★
Playability ★★★
Rating Iffy



Aliens — Electric Dreams

IFTY

I've never really had a lot of time for Electric Dreams. Lacking the sophistication and sheer excellence of its parent. Activision, E.D. have tried to balance this with the entreprenurial flair of Rod Cousens — old Mr. Quicksilver himself. Big licenses (Back to the Future), big causes (Soft Aid), and big gambles (remember the Dandy/Gauntlet fiasco of last year?) have all failed to conceal the dearth of sound games design at this prolific label. Rod, however, just keeps bouncing back — this time with one of the biggest licenses of the year. Could a computer game actually capture the high-speed thrills of 'Aliens'?

Well, first let's simplify the plot a bit. In this game you know where the Queen, (she's marked on the map), your various team members move separately but without any real sense of each others precense (you can't see another crew member if you're occupying the same room). Newt, the cutsy kid who is actually one of the Movie's main pre-occupations, is reduced to a random character who gives you a few points and promptly disappears, and the characterisation of your Heroes, which is so important to how they behave in the film, is totally lacking from all but the inlay. What is left is basically 'Shadowfire' with a few pseudo-digitised pictures and a well animated Alien. Because you can't see a bird's eye perspective of where your crew are in relation to their immediate enemies, the strategic side of this game soon becomes confusing. After wondering around blasting 'Bio-mechanical growth' (looks a bit like Alien flock-wallpaper) and trying to get my bearings, I surrendered to my inevitable defeat.

All the screens are basically the same, all the Alien-sequences are the same, all the crew members are the same. In short Aliens simply lacks depth and, desite the repeated reference to Mark Eyles, any real sense for game design. At first you may find the graphical representation of an Alien wandering around, turning towards you, and homing in for the kill quite effective but the novelty soom pales. Aliens has sacrificed most of its potential for the sake of gimmicks overused in previous games. Much more should have been made of the Alien's strategy or indeed the machinations of your own crew. As it is, Aliens lacks even the unity of perspective that made Argus's original 'Alien' game (now excellent value at £2.99) such an enjoyable play. I confess to being disappointed.

T.M.

Price: *£9.95*
Graphics: ★★★
Sound: ★★★
Playability: ★★★
Rating: IFFY

Scooby Doo — Elite

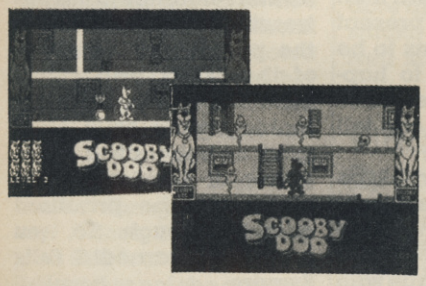
CRISP

With Elite you can become anything you desire. You've been a boxer, a commando and now how about having a bash at being a dog? Scooby Doo to be exact.

You've just arrived at an old ruined castle and as you leave the mystery machine your friends, Velma, Shaggy, Daphne and Fred are suddenly captured by evil

forces (ho hum!) apparently there is a group of mad scientists about to perform a few experiments on them. Your job is to find and rescue your friends. This is made just a touch more difficult by the presence of a ghost and its henchmen who are out to make life as difficult as they can for you. You view the castle side on and the ghost and other thingies just appear out of the walls. Not very pleasant, at all! If you come into contact with them, then you're a gonner, you can punch to get rid of them, but they usually just appear right on top of you. It gets very annoying. You start with 6 lives but you get an extra one for eating a Scooby Snax, of which there are a few left about just for you to find.

Although Scooby Doo is



sometimes very annoying I should think its lasting appeal would be quite good because it is a game in which you want to get a bit further and it does make you think 'Oh just one more game... well, just one more... which I suppose is what the word addictive means. The graphics are very sharp and well designed, especially those of Scooby's mates. The sound at the title screen is fantastic. It's a super rendition of the cartoon theme tune but during the game is limited to mainly spot effects.

Overall an interesting game from Elite that's worth a look especially if you're a Scooby fan. Now excuse me while I go for my Scooby Snax! And just one more try at that ghost...

J.A.

Price: £9.95
Graphics: ★★★
Sound: ★★★
Playability: ★★★
CCI Rating: Crisp

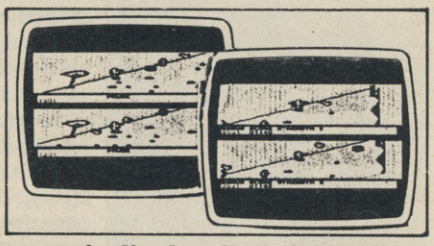
Twinky Goes Hiking not by Firebird

DODGY

Between all the bad publicity, the resignations and the hype, Firebird have been slowly getting their act together this summer. On the full price side there was Druid and Sentinel, and for £1.99 there was Warhawk, Ollie and Lisa and Thrust. To misquote Jimmy Greaves, however, 'Software's a funny old game' and no sooner had Firbird started boasting how they'd stolen a march on Mastertronic than Code Masters stole a march on them. Alas it will take better games than this to turn it around again.

Twinky is a kind of horizontal platform-game. There seems only one direction of movement (left to right) and your cute little character runs and jumps against the clock to finish a number of scrolling courses before the time runs out. There is also a second screen where another Twinky (his twin-brother Reg, I'm told) tries to complete the same race in a better time. Split screens have been around now for as long as the old Decathlon games, but only some games and some companies use them properly. This, to my knowledge, is the first budget game to use this format and, frankly, it shouldn't have bothered. The only way to get good two-player action is to have them both present on the same screen (Ikari warriors, Nemesis etc) or have the two screens in genuine interaction (Spy versus Spy, Pitstop II etc). Twinky does neither, and there is little satisfaction in seeing Reg race to victory time after time without ever really racing against him.

But this is a colourful little game and not bad value. Your man can only really run or jump and you will soon find this is a pretty monotonous process, despite the irritating music. Against him are boulders, crevices, and a variety of worm-like sprites who slither towards him making certain jumps impossible. When you fall, Twinky



seems to dive headlong into the ground (poor animation, here) losing a few seconds before he reappears. Too many of these in one-player mode will almost certainly lose you the game, and I can't say I was altogether disappointed.

I simply can't enthuse about Twinky. Firebird seem to love these unplayable 'cute' games (Spikey Harold, Gerry the Germ goes Body Popping, etc) and it's perhaps one of the reasons they took so long to catch up with Mastertronic. I hope they'll return to form soon.

T.M.

Price: £1.99
Graphics: ★★★
Sound: ★★
Playability: ★★
Rating: Dodgy

C16

Footballer of the Year — Gremlin

IFFY

Now don't get excited. Footballer of the Year on the C16 and Footballer of the Year on the 64 are two completely different things. The latter has graphics, icons, a save option and four divisions. The former has text, no save game option, and three divisions. There is a Plus/4 version on the same tape and I don't know if thats any better so all you Plus/4 owners ask for a look at the game before you buy it.

Now on to the review. You start as a 17 year old footballer and you can choose from 3 divisions to start in. Gremlin advise you to start in the third division so you can develop you skill but I found even there, I

Is it a bird? Is it a plane? No, it's SUPER FELIX! He knows who y

A Load of Ball-bearings!

One of my dumbest female pussyfriends sent me this utterly charmless note. As there must be one or two charmless readers out there (anyone who doesn't like me plus Ms Eastbourne of Nicolson) I thought they'd like to read it.

"Hi there Dahrlings!
This photo of a well known games programmer was passed to me (for an undisclosed sum) and I just knew you'd love a peek! Computer programmers can be an unusual breed, but this little snappette proves that games' programmers top the league in strange behaviour.

As it happens, the subject of this tasteful composition is Mr Steve Lee who has a string of excellent games to his credit. He's had games published by Quicksilva and Mastertronic and four hits to date on the Virgin Games label. Falcon Patrol and Falcon Patrol II on the CBM 64 have a cult following years after their release with hi-score records (held in the Virgin safe) still being broken regularly. Shogun, also on the 64, was his most outstanding technical achievement and is one of the most original action/strategy games around. And to think, all programmed by those strong hands!

Posing as a Thermal Underwear Telesales Person, I managed to gain Mr Lee's confidence in order to find out what he's up to at the moment. As well as selling him three pairs of Megathermalactics (in some intriguing colours — you'll be interested to know girls) I found out his current game is Erebus on CBM 64 (yes, he just loves that machine). Steve's games are technically brilliant, his scrolling makes the TV screen look like it's on ball bearings. In his action games he's the ultimate blast 'em devotee and spends a lot of time perfecting gameplay, with enthusiastic feedback from the other Gang of Fivers. Erebus has picked up some very good reviews, but I don't need to tell you that, do I?

I did come clean and ask Steve how the photo came about. After the initial period of stunned silence he explained how he'd been enjoying himself one winter on a camping and fishing holiday (he's so butch I could just swoon) when a friend read him out his first ever bad review.

"I found myself in that pose purely by reflex", he told me.
Love
TIDDLES

(Footnote to any ladies reading, Steve's phone number may be negotiable. Try me on 01 727 8070.)"

'Scrolling that makes the TV screen look like it's on ball-bearings'? 'I found myself in that pose purely by reflex'? Why not program your computer to ring the number a million times a day — reversing the charges of course!

The Duchess and I

As the new Duke of York has just been admitted to the House of Lords, it is time to clear up certain vicious rumours started by envious other Commodore Mags. I wish to deny absolutely I was offered the title 'Duke of York' if I would marry a certain Sarah-Jane Ferguson. There was no question that I wanted to have such arrangements made for me, even if the Queen begged me personally. I did not under any circumstances wish to be accused of marching the 10,000 strong CCI staff up a hill and then down again as the present Mr Fargusson seems to be rumoured to wish to happen. As his brother commented to me 'You can tell that to the Marines!'

My involvement with Miss Fergaston was entirely innocent. We did no more than share a single water ski, equipped, it is true with bar, bunk and C64 for a period of only 14 days (and 15 nights) when we were shipwrecked on Lake St Moritz one Christmas. Any bodily contact was necessitated by the need to protect Miss Ferguson from sunstroke. Nor is there any truth that 'Sally-Wally', as I came to call her, offered to jilt the now Duke of York and give the whole thing a miss (no relation) if I could persuade O.S.E. to let her design company have a contract to re-design CCI's game pages.

I have the personal assurances of P.M. Margaret ('Thank you for the millionth 64') Thatcher that any further reference to this distressing 'affair' will bring to the perpetrator an attack of the MI5's and either banishment through the looking glass to St Atariland or beheading at the Tower of London, if that place can be privatised quickly enough. So, you have been warned! S. Felix Esquire.

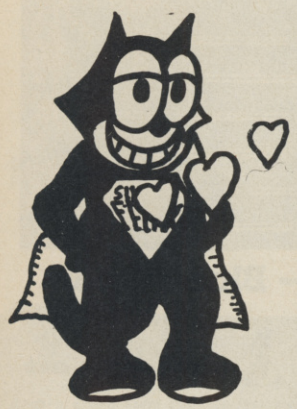
Which Witch is Which?

If you see a haunted look to my whiskers don't be surprised. Super Felix, I admit, is no match for the super, supernatural. My fur rose, when I heard some peculiar whispers from the empty, echoing halls of CCI Tower about ungodly goings on in some of the offices. No, I'm not referring to the invitation from Argus to 'Meet the Witch' — Imelda of TV 'Grange Hill' now a no doubt fantastic computer game. No, it's about lovely Lady Linda of CCI, descendant of 18th century Lord Mayor of London, John Wilkes who was a member of the notorious Hellfire Club that met for orgies and other innocent social activities in caves and cellars in those ancient days.

Well, lovely Linda (she's the one who likes to cut tee shirt wearers heads off) was recently told by a medium that she was a re-incarnated witch who lived in Paris in a previous life. As her ancestor John Wilkes did while in exile. Ho-Ho, we scorned, *we* don't believe in that psychic bosh, do we? But Princess Krotoa of Mose flashed her eyes, kissed her fingers and made a strange sign (no, not a V sign!). I felt a nasty shiver run through my paws and tail. It was, our production Princess Sharon Wongflic told me hiding under the table, the sign against the evil eye! And then I remembered hearing about our 200 kilo Sacred Editor dancing naked round bonfires in woods at midnight with nubile maidens... What's going on here, I wonder.

Now they're all looking at me oddly why?... What *is* Lady Linda doing with that broomstick? Why does my basket smell of sulphur and gundog? Why have I got this very strange feeling a if my hair were falling out? Has someone Imelda, Sarah James, Jo McBourne Meads, Clare (never return phone calls) Hirsch cast a spell on me? Help, help I'm turning into a... human being... Yuk!

ALEXANDER + NATASHA LOVE NOCTURNAL WALKS WITH THE DOG - WE KNOW WHAT YOU DO AND WHY! - FELIX THE SPY



Little Mo Jeep

It's not true as people have been gossiping that ace reviewer and international socialite Princess Krotoa de Mose has deserted her chief Max the Ad for his jeep driving henchman Major Billy Brown. It is totally untrue that the Sloane Ranger Princess said 'I love the way Billy jerks into four wheel drive'. Believe it or not she actually calls the macho leather-jacketed Billy 'Mummy'! yes, she says its because 'he nags, nags, nags just like mummy and look at his hair, too..."

Major ('Reagan and Thatcher are weak-kneed liberals. Kinnock? He's paid by Gorbachov personally.) Billy was recently arrested by the police and taken from CCI Tower in handcuffs. They thought he was a right-wing terrorist who was threatening the international political freedom organization 'Amnesty'. It turns out that out on one of his ('A good Commie is a dead Commie, everyone should be forced to read 'The Sun') binges, he'd left his camouflaged jeep in Amnesty's car park. O.S.E. bailed him out muttering about 'hanging being too good for him'. Next week — Princess K's informed views on 'capital punishment' ('Is it something to do with the radio station? No? Oh, *that* capital punishment! Oh well, I don't agree with it. What about Billy? 'Oh there are exceptions...') Ah yes, it's never dullsville here at CCI Tower...

Yo the heave ho!

What *is* going on? I cannot keep up with all the disasters hitting viciously all my very best friends in the computer world, could they have offended OSE? Could his curse have descended on them for some momentary lack of respect? Sweet Jim Levy of Activision bites the dust, (sob, sob). Ariolasoft's gorgeously bearded Frankie Brunger finds himself out in the cold, (boo, hoo). Peter (Handsome) Holme or Argus (wail!) departs peacefully, Nick Bessey once of UK then international supremo of Commodore disappears in a puff of smoke to say nothing of Neil Stewart of CTW jumping and being pushed simultaneously. Even that nice Nick Alexander is no longer so Virginal leaving his G M of software role to a Mr Paul Latham who plays with toys and is, I have to admit, totally unknown to everyone in the world. Mr Latham's appointment, according to Virgin "has been made to free Alexander to concentrate on Virgin Games other activities". That sounds like the 'vote of confidence' given to football managers just before they get the boot doesn't it? Another rumour is that Nicky boy has secretly changed his name to Ranulf Twistleton Wykeham Fiennes (I swear that is *exactly* it!) and plans to lead an expedition round the world in search of the fabled "Golden Fleece" computer game (production cost 50p; Cassette £100.00 Disk £50.00). Guess who will play argonauts to Alexander's Jason... none other than all these famous adventurers, Levy of Activision, Brunger of Ariolasoft, Holme of Argus, Bessey of CBM and Stewart of CTW. You don't believe me? Can't you see them rowing (they were all of Oxbridge, of course)? Can you think of a more enterprising crew for such a task? Aren't they all in the same boat already? Answers on a postcard please to Sir Richard Branson, Minister for Street Cleaning, Power Boats and Leisure Services, c/o 10 Downing St., London W1.

Madison Ave Epics

Although you may not believe it, Solutions, Intermediates and Lesley Headlines are not the only PR companies in the universe. One or two tiny others pick up a few crumbs from their sumptuous table. In their inhibited UK way there are too, certain phases these hype-giants would never dream of using. 'Ring around the Rosie' (What's that? It sounds like an immoral game to me. Don't mention it again! Ed)... 'Lean and mean'... 'Dancing in the aisles'... Oh dear, no... frightfully not...

In the US inhibitions are something you get rid of at parties, especially PR ones... I know this 'cos OSE was contacted the other day by G S Schwartz Inc from Madison Ave, NY. OSE who is terrified of American accents (he runs, hides and takes the 5th Amendment in the cupboard) ordered me to receive their message. It concerned Epyx (you know, US Goldfinger's Summer, Winter, Autumn games Epyx). I kid you not this is what they said practically word for word.

"While other software companies were playing "Ring Around The Rosie" — and we know who fell down — Gil Freeman at Epyx in Redwood City, California, insisted that the only people who should be playing games were the consumers that bought Epyx software, not those working in his company.

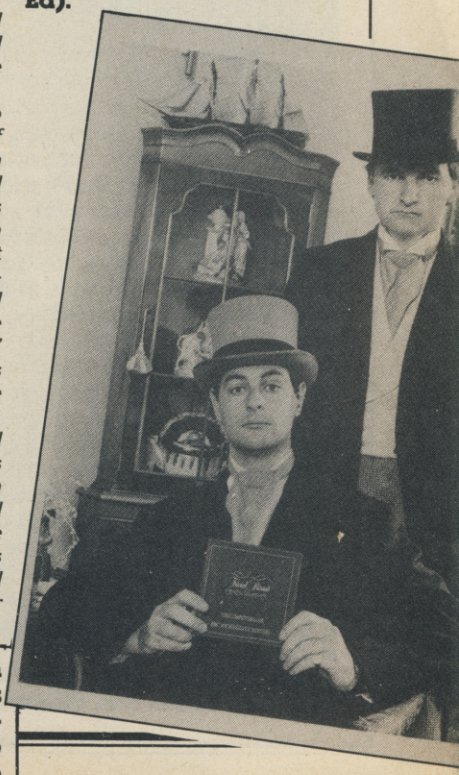
Freeman turned Epyx into one of the hottest bets in town when he joined as president in 1985. Epyx is making money — a claim few home entertainment companies can make — because Freeman runs a lean and mean operation. He plans to take the venture-funded company public sometime next year.

Since Freeman's joining Epyx, the company has realized record sales and profits, with a 500 percent increase in sales in the past two years. Freeman has a team-oriented approach to management that, coupled with his extensive financial and operational background, has laid the groundwork for many more winning seasons for Epyx.

He's got the Midas touch. Prior to joining Epyx, Freeman was chief financial officer for Sharper Image, a $100 million mail order and retail store operation. Before that, he was with Pier 39, a $50 million San Francisco waterfront development at which he eventually became president and chief financial officer. And while people were dancing in the aisles and taking "God knows what," Freeman was keeping the books "straight" at Bill Graham's Fillmore East and West.

I'd like to put you in touch with Gil Freeman to discuss how he has turned Epyx into a company with more than $20 million in sales and now stands at the helm of the company's growth and expansion as it enters it second profitable year. I'll contact you shortly. Thank you for your time."

Now wouldn't you like to write like that, Solutions Inter Headlines? For lessons in this really creative writing contact Jeri Cohen at One Madison Ave, New York, New York... My Kind of Town (or is that Chicago?). So good they named it twice and the Battery's up and the Bronx is down... Don't take any wooden nickels, Jeri (M or F?) Have a nice day! And thank you for *your* time! (Have those terrifyingly enthusiastic Americans gone? Can I come out now? Ed).



Luke Skywalker and Darth Vader starring in Domark's forthcoming computer versions of 'Star Wars'. In 'The Empire Strikes Back' the same actors will be disguised as R2D2 and C3P0.

...REVIEWS CONTINUED...

was rated as only average after a whole season of hard graft.

At the start of the season you begin play, using expensive things called goal cards to determine whether you score or not. Your goal cards are worth 1, 2 or 3 goals per match and it's up to you when to use them. Using them takes the form of the computer asking you whether you want to kick the ball left or right — it's here that Sod's law takes over — kick to the right and 9 times out of 10 the goalie saves it. Another expensive goal card down the drain.

If you're feeling particularly lucky you might have a try at the incident cards. These cards are sometimes a godsend giving you the chance of earning lots of money by a quick press of the space bar. You get told things like "The Inland Revenue have given you a tax rebate — how much is it?" and get a choice of 5%, 1% or 34, when the cursor is over 5% press the space bar and you get a few grand to keep alive for another week. It's not as easy as that though because the cursor moves very fast. Incident cards aren't all good though and sometimes you get your cheque book stolen and worse still injured, the hazards of the game I suppose.

When I first played this game I hated it and was hugely disappointed, but it's grown on me a little, since I had a little talk with O.S.E. (our sacred Editor) and now though still disappointed, like it a little more. Some of you out there will love it, but I'd think twice about getting it.

C.K.

Price: £6.95
Graphics: Na
Sound: Na
Playability: ★★
Rating: Iffy.

Harvey Headbanger Firebird (Silver Range)

DODGY

As some of you may know, I don't always rate Firebird C16 Silver games very highly. That really is a bit of an understatement, I often find their games boring, frustrating and a waste of time. So it will be of no surprise to you when I tell you Harvey Headbanger is no exception.

This is the plot(?). You are Harvey and you scrap with a matey called Hamish Highball for the fun of it, using your large bellies and strong heads. If you bounce into each other you get disorientated and move all over the place for a while.

The object of the game is to encircle your oppenent in a ring of the squares while he tries to do the same using red squares. You can also make yourself drinks by encircling a section of red squares — these refresh you and if you're topped up when you bounce into Hamish you'll recover quite quickly.

You can play against either a friend or the computer, I'd advise you to play against a friend as the computer is impossible to beat, even on level one. Maybe I didn't practice enough but I got so frustrated playing it I was beyond caring.

If you have any sense you'll stay well clear of this one. Firebirds C16 motto sometimes seems to be "If it's cheap it doesn't have to be good".

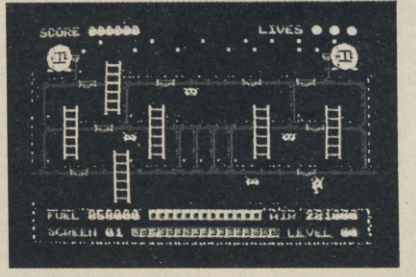
The graphics are good, so is the sound so maybe you'll like it. (Maybe pigs will fly). Sorry again Firebird, you can do better than this!

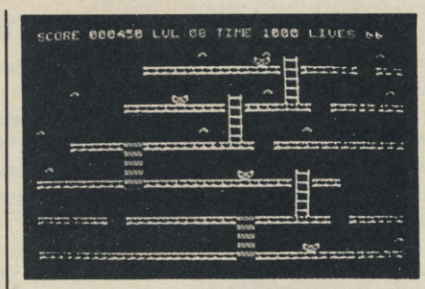
Price: £1.99
Graphics: ★★★
Sound: ★★★
Playability: ★★
Rating: Dodgy

Astro Plumber — Blue Ribbon (CDS)

NAFF

You are a galactic maintenance man just arrived from Earth and your task is to repair the leaking air pipes in caverns under the moon's surface. While doing this hazardous job you're molested by the obligatory nasties that abound in the caverns. You can't blast them, so instead they give you a jet pack





Joey — Blue Ribbon (CDS)

IFFY

This game reminded me very much of Astro Plumber — lots of platforms, ladders, nasties — you know the type of thing, but, thankfully it's not that bad, though it's not that good either.

You are Joey the kangaroo and you must collect all the boomerangs on the screen within a certain time limit. When you complete the screen within the time limit you get a bonus — the quicker you are the more points you get. On the first couple of levels you only have to dodge squat little monsters but as you progress through the eight screens things start to get more difficult as the monsters speed up and rogue boomerangs try to get you. As if they weren't enough, Aborigine's spears start flying around trying to nail you for the Sunday roast.

The game graphics are very crude, with no animation at all. The sound is also crude and it gets quite irritating at times.

All in all a very average game with quite a few flaws but I suppose for a budget, it is adequate.

C.K.

Price: £1.99.
Graphics: ★★★
Sound: ★
Playability: ★★
Rating: Iffy

with which you can fly over them. Or so they say. Frankly I did not have much success with that manoeuvre and when I did it might have been just blind luck.

You will instantly find this game boring and unplayable even at budget price, climbing up and down ladders and getting killed by indestructible nasties isn't my idea of fun and I'm sure you will be of the same opinion if you happen to buy this game.

C.K.

Price: £1.99.
Graphics: ★★
Sound: ★
Playability: ★
Rating: Naff

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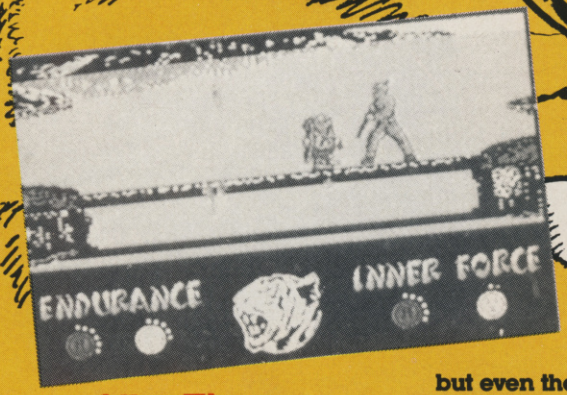
C16

MEGA



Way of the Tiger
Gremlin

You are an acolyte of the Way of the Tiger and to become a true ninja you must face the test of unarmed combat, pole fighting and samurai sword fighting. The journey will be hard and arduous but with courage and strength you might succeed.

In the first section, unarmed combat, you must do battle with a couple of ninjas and a few goblins who brandish evil looking swords.

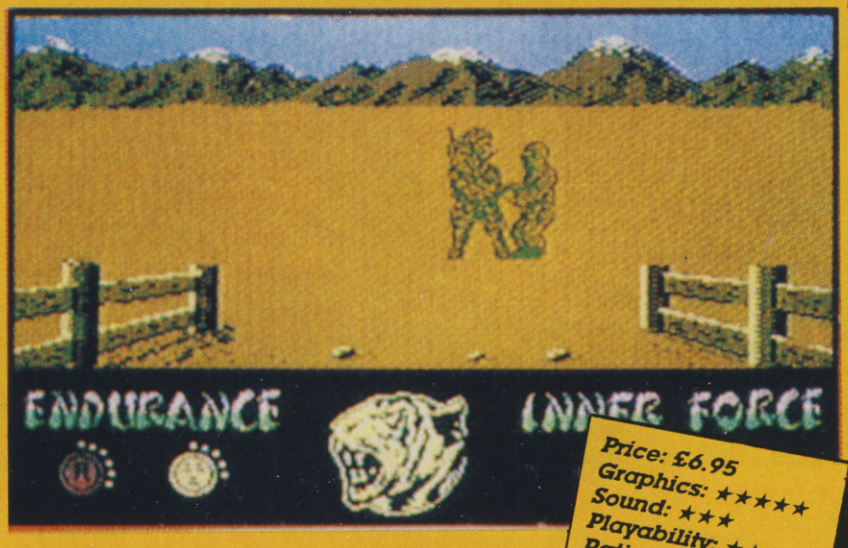
In pole fighting it's the ninjas again always game for a fight, with dwarves backing them up with hefty maces. You fight over a slippery log and if you happen to put together a sequence of ungainly moves you fall head first into a pod.

Sword fighting is the last of your encounters and you must beat another ninja and a man with boots and head-dress. The booted and head-dressed warrior is armed with a long sword and he leans forward and chops you in the head while you can do nothing about it. I found the best tactics were to hit and run but even then I got beaten often enough.

The game has a large variety of opponents awe-inspiring graphics that scroll at three different speeds — foreground the slowest, clouds the fastest. The big let down of the game is the limited number of moves you can make — severely cutting down the playability. It is a shame because if it had got a couple more moves in it would have knocked Fist out of the running. Some people may prefer this anyway because of the different opponents so I won't try to make up your minds for you. If you have the cash get both, and if you're a programmer how about a mixture between the two.

A good game whose exciting points outweigh the problem. If this game is anything to go by Future Knight should be truly awesome.

C.K.



Price: £6.95
Graphics: ★★★★★
Sound: ★★★
Playability: ★★★★
Rating: Mega

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C16

MEGA

Jet-Set Willy 2

Jet Set Willy 2 by Tynesoft

Tynesoft seem to be making one quality game after another. They have now released a state of the art platform game — a classic of its kind.

Jet Set Willy, Manic Miner, etc were some of the earliest games round and no doubt many of you will be wondering if this stands the test of their time. Well, have no fears, for Tynesoft, whose dedication to quality in the less popular machines must be applauded, have come up trumps with this conversion of Jet Set Willy II.

It has (and you can count them if you want) over eighty screens of frustrating, addictive, brain-teasing fun and turbo loads in four parts, fully utilising the total C16 memory. This is an idea which up to now has only been used by very few software houses, and it should be used more often. Follow their example, C16 software writers.

Here is the plot of Jet Set Willy II; You are Miner Willy and you were recovering in hospital from a fall down the stairs. While you were gone however, the builders came in and added lots of room to your mansion. Now you must clear up the mess they've made — which entails lots of exploring and collecting on your part — an arcade adventurer's dream. I say arcade adventure because, as in Monty on the Run, you can explore all the locations of the house before actually trying to complete the game. This, in both these games, is an excellent idea and takes them out of the simple platform category. Jet Set Willy II's graphics are excellent with brilliant animation — especially the walking fish bowls (which remind me of Noel Edmunds, don't ask me why) and the laughing and blinking heads. A lot of expert programming has gone into these features. Tynesoft tell us that it was programmed close to their Newcastle home. I believe them but it is good enough to have been accomplished by the great Udo (Winter Events) Gerz. Odd, how other Commodore Magazines have suddenly woken up to him after we gave him an Oskar, isn't it?

Jet Set Willy II's playability is really incredible. I still don't believe how terrific this game is. This is an all-time C16 great, definite and immediate addition to your collection.

There will be arguments whether this is better than Monty on the Run, but then this is four or five months later and so there are bound to have been improvements in technical sophistication.

Tynesoft are really making a real showing in the software stakes and I can't wait for their next game — said to be an awsome shoot 'em up of the classic style.

C.K.

Price: £6.95.
Graphics: ★★★★
Sound: ★★★
Playability: ★★★★★
Rating: Mega

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Incentive have come up trumps this month and are giving us 25 copies of the GAC Adventure Writers Handbook. If you want to know how to write a good adventure, then this is the book for you. Answer the following questions, then send your answers on a postcard to: GAC Competition at CCI

What are these adventurers known for?

1. Amerigo Vespucci
2. Amelia Erhardt
3. Sir Edmund Hilary
4. Marco Polo
5. Dr Livingstone

Closing Date: 15th May 1987

WIN!

PIRANHA'S NOSFERATU

Nosferatu takes you into the world of the undead and challenges you to outwit and destroy the vampyre.

We have six copies of the game to give away to the first six correct entries pulled out of our comp. sack. Send your answers to these questions on a postcard to CCI marked 'Nosferatu Competition', to reach us by May 15th.

1. Who played the vampyre in the film "Nosferatu"?
2. Name one blood-sucking parasite
3. Who wrote 'Dracula'?
4. What is the medical term for sharp, pointed teeth?
5. Name one other Piranha game.

WIN!

GREMLIN'S C16 WAY OF THE TIGER

We have a treat for all the C16 owners out there from Gremlin . . . 25 copies of their smash-hit game "Way of the Tiger". This game is the follow up to their successful "Avenger" and is just as much fun to play as that smash.

The first winning 25 postcards out of our comp sack will get a copy. Postcards to "Tiger" competition at CCI, to reach us by 15th May, or else . . .

1. Name another famous Gremlin 'animal'
2. Complete the lines, 'Tiger, tiger burning bright . . .' and who wrote it?
3. What means of self defence is used in 'Way of the Tiger?'
4. What's wrong with this statement, 'A tiger never changes his spots'.
5. Who said 'imitate the action of the tiger?'

WIN!

GREMLIN'S FOOTBALLER OF THE YEAR

Ever thought *you* could do better as you watched your favourite team head for disaster yet again? Try out your management, tactical and financial skills with Gremlin's Footballer of the Year, the prize which 25 readers can win in this fun competition.

Send the answers on a postcard and you could be storming up the league in no time. Entries to CCI marked "Footballer of the Year" to reach us by May 15th.

1. Who is the manager of Barcelona Football Club?
2. Name the year Argentina last won the World Cup
3. Who were the *previous* managers of Manchester United and Arsenal
5. Who is the Managing Director of Gremlin Games?

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Send your entries to: CCI, 40 Bowling Green Lane, London EC1R 0NE.

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The absolute Partygag! **More than 15000 copies sold in Europe**

The hottest program in Europe (Made in Germany). Excellent graphics. Since you are reading a serious Computer Magazine we cannot show you more than a title picture and cannot explain what actually happens when you have started the program. Only one thing: we got a great review in PLAYBOY magazine (German edition) 11/86 page 33.

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Every year in the U.S. they elect the Miss All Bare America. You usually see tiny excerpts in cinema or on your video.

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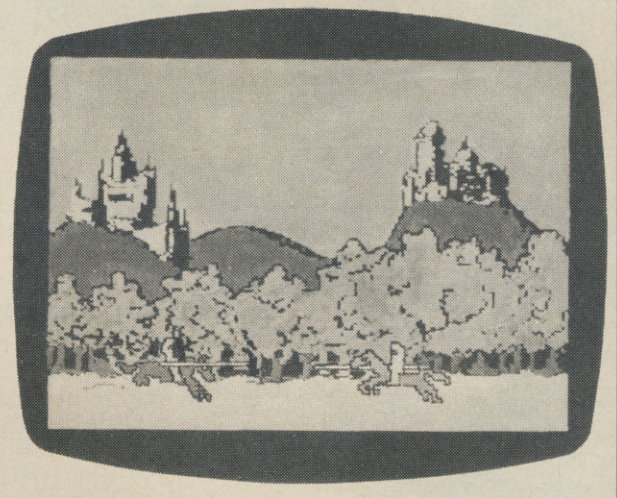

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Major new title arrives ...

...by Helicopter!

Microprose has taken to the air, literally, with its major new title, Gunship — delivering it to distributors by helicopter.

First stop was Microdealer International, Milton Keynes — much to the astonishment of the 16 strong workforce.

Nobody knew about the surprise visit, or that they were all to go for a joy ride in the helicopter.

Microdealer's managing director, Lee Ginty, had also been kept in the dark.

"The staff will certainly remember Gunship after this. So shall I, it's the first time I've ever been in a helicopter," he said.

Gunship is a simulation of the Hughes AH-64A Apache combat helicopter — one of the most lethal weapons in the modern military arsenal.

Stewart Bell, Microprose managing director, said later: "We wanted Gunship to arrive in style, so we hired a helicopter.

"Admittedly it wasn't the same machine as the one in the simulation, we didn't want to cause a red alert!"

Microprose aims to make similar helicopter deliveries to a number of other distributors.

Gunship has been released for the Commodore 64/128, price £14.95 for cassette and £19.95 disc. Versions for the Apple, Atari ST, IBM, Spectrum, Amstrad CPC and Amiga, are to follow.

Win Gunship Goodies

Gain all your heart's desires in this fabulous Microprose competition... The winner will win not only a Gunship sweatshirt, but also an Airfix model and, best of all, a copy of each of the Microprose's famous games: F15 Strike Eagle, Silent Service, Solo Flight, Acrojet, Kennedy Approach, Spitfire Ace, Hell Cat Alley, Mig Alley Ace, Conflict in Vietnam, Crusade in Europe, Decision in the Desert, Nato Commander and of course, Gunship.

Don't forget to let us know which size you prefer your sweatshirts to be! To enter, send your answers to the following questions on a postcard to Gunship Competition, CCI, 40 Bowling Green Lane, London EC1R 0NE to reach us by May 15th.

1. Where was the Gunship Helicopter first used in conflict?
2. What was Microprose's first simulation success?
3. How many blades has a normal helicopter's rotor?
4. What is the C-47 and what is its alternative name?
5. Name the Major who leads Microprose.

TOP TWENTY

'Gauntlet' is still at the top of our C64 chart, though Paperboy has crept back up the chart and is hot on its heels. Anco are making a mark on the C16 front with three hits, including the No.1 game.

C64

	GAME TITLE	COMPANY		Price (£)	Rating
1	Gauntlet	US Gold	→←	9.99	Mega
2	Paperboy	Elite	↑	9.95	Mega
3	World Games	US Gold	↑	9.95	Crisp
4	SWAT	Mastertronic	★	1.99	T.B.A.
5	Hyperbowl	Mastertronic	★	1.99	T.B.A.
6	Jailbreak	Konami	★	9.95	Crisp
7	Escape from Singe's Castle	Software Projects	↓	9.95	T.B.A.
8	Flash Gordon	Mastertronic	↑	2.99	Crisp
9	BMX Simulator	Code Masters	★	1.99	Crisp
10	Space Harrier	Elite	↓	9.95	Crisp

C16

1	Winter Events	Anco	↑	7.95	Awesome
2	Masterchess	Mastertronic	★	1.99	Crisp
3	Blockbusters	Macsen	★	7.95	Crisp
4	Hit Pack	Elite	★	9.95	T.B.A.
5	Bridgehead	Anco	★	5.95	Mega
6	European Games	Tynesoft	★	7.95	Crisp
7	International Karate	Endurance	★	2.99	Iffy
8	Sports 4	Anco	★	7.95	Mega
9	Storm	Mastertronic	★	1.99	T.B.A.
10	Comp Hits 10 Vol 3	Beau Jolly	↓	9.95	T.B.A.

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C64

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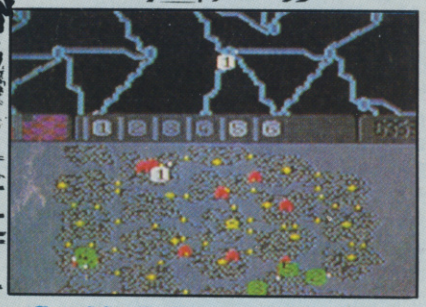
TRACKER TRACKER



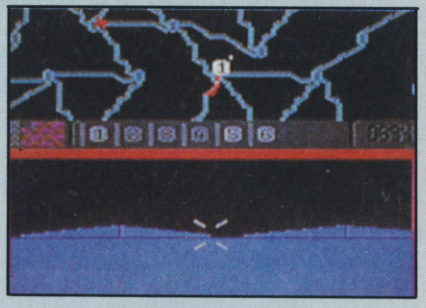
Tracker — Rainbird Software

The Art Studio, The Music System, The Pawn — The story unfolds for Rainbird, Telecom's newest label and the one that currently occupies that dangerous area of software called 'leading edge', once the personal stomping ground of Beyond.

The problem with such accolades, as Beyond themselves would testify, is that it only takes one or two turkeys to shoot it to bits. While Starglider may have introduced Rainbird to the masses, I fear Rainbird's reputation as *the* class Adventure and Utilities house may be now in jeopardy. For, alas Tracker will do them no favours at all.

The main problem is that it attempts to hype itself into areas that it's ill-qualified to occupy. Artificial Intelligence, for instance, is mentioned several times in the packaging, but in effect all you have is a tough opponent and you'd expect that in any decent computer game. Likewise, claims of it being a combat simulation are shot down as soon as you see the graphics, and the arcade screen is really not of the standard we'd expect from a game almost 2 years in the writing.

It certainly attempts to set a new standard in its class, but what we have is really 2 games — one Strategy, where you remotely control your units on a map of the playing area, and one Arcade, where you shoot out your enemy in one-to-one combat. The strategic bit is simple and actually quite absorbing: you start with 3 units which move around on the Trackways (a bit like Tube lines) as and where you direct them. You may either do this directly, telling each unit where to go at each junction (or node, as it is called) or you can set a course for the unit and it will proceed to that point automatically. Obviously units are sent out to stop you, and this is the main point of the game where artificial intelligence is supposed to come in. Some nodes are really Communication Centres (only colour distiguishes them) and these have to be disabled to regain control of the playing area. At any time you may call down reinforcements (up to a max of 9) if the unit you wish to support is in a friendly Sector (ie, the Comm Centre is destroyed) and these units are then controlled individually in the same way as before. Accessing these units is as



simple as pressing their number on the keyboard and there is on-screen status-line to show you which units are in use, which are in danger, and which are destroyed.

The main problem with Tracker is that you can't remotely engage enemy units, only avoid them. Thus every time you are under attack you must switch to the very dull arcade screen (showing your Unit in the trackway) and wait for your opponent to appear ahead of you. Shoot a few times and he's gone, but if more than one of your units is in danger you will almost certainly lose the others while you are waiting for your first kill to appear.

Graphically the game is rather dull with colour used unimaginatively. I was disappointed to see no distinction made between types of enemy unit, or geographical differences between Sectors, both fairly simple alterations to include. The on-screen map scrolls well, but enemy units are shown as coloured blobs and in a hectic battle it soon becomes very confusing as to which are your most immediate dangers. It's a shame Tracker didn't drop the arcade screens and attempt to be a really good wargame, because I'm sure with a little variation it would have made it. Some of the reviewing team had different ideas and thought that Tracker did have something going for it. There were comments like 'Tracker could top the addiction charts... it is an interesting mixture of styles... it could top the addiction charts' and even that 'it was terrific value for money'. I disagree.

In 1987, with games like The Sentinel selling for under a tenner, I'm tempted to say nothing's worth £17.95 and certainly not Tracker. If Rainbird are trying to imply that long and expensive development time has to be recouped by a high cover-price, then the product should at least demonstrate the technical brilliance of The Pawn (also years in the making). Most software houses could have polished off Tracker in under 6 months and some might have rejected it even then.

What you can say is that Tracker is a try at something different, but probably Rainbird will do better than this next time.

T.M.

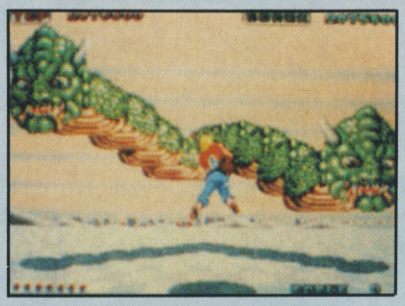
Price: c£14.95, d£17.95
Graphics ★★
Sound ★★
Playability ★★★
Rating Iffy

Space Harrier — Elite

CRISP

Once again Elite take us into the land of the arcade machine, this time with Space Harrier. You are off to try and save Dragonland and being the seasoned spacewar veteran that Elite say you are, that should be no problem. The Dragonland is occupied, so I am informed, by evil, barbaric creatures hell bent on your destruction. They are supposedly controlled by a supernatural phenomena. So what are you waiting for? Get out there and do battle with these deadly alien beings.

The view you've got of the playing area is very much like you had in 3D Deathchase. The concept of the game is also very similar. You have got to avoid the trees and pillars whilst trying to blast the aliens. You have a time limit in which you can try and get as far as you can and get a few thousands. As you progress through the levels and run out of time you then get nine lives to finish the game and save Dragonland. A simple enough game for the arcade, shoot 'em up addict but it hasn't really got the substance to hold my attention for very long. There was not enough variety. The graphics are not up to the usual Elite standards because



they have a rather unfinished chunky look. The sound is reasonable but not up to standard once again. Quite playable but not the best one Elite have done.

J.A.

Price: £8.95
Graphics: ★★★
Sound: ★★
Playability: ★★★★
CCI Rating: Crisp

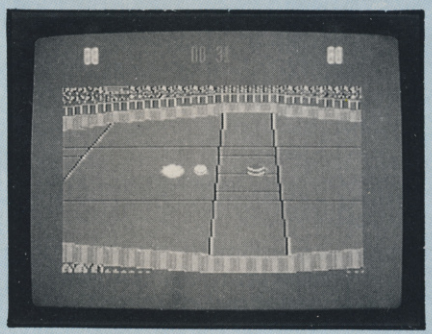
Xeno — A'n'F

CRISP

Ipswich for the snow cup! Sorry, got carried away a little. Xeno is not really a football game, although it's very much the same principal. Xeno is in fact a kind of futeristic Ice Hockey.

Many years ago on the frozen wastes of Io, there was very little in the way of entertainment for the miners and pioneers. They got into the habit of kicking a small ice puck around. The game became very violent and the killing of an opponent was not unusual. Now, though many years from those early games, the game of Xeno, named after the earth colony on Io, has become more sophisticated, but it is still a test of physical power. The idea is to take turns in shoving the puck and trying to get it in your opponents goal. Although Xeno has a very simple basic idea and easy gameplay it is a suprisingly addictive game. The game is played in four quarters and each quarter can last from one minute to nine minutes. The player who has scored the most goals is deemed the winner, after your chosen length of time has elapsed.

The graphics are nothing special but are good enough and effective for their job. The game has nine different computer speed levels from mega quick to dead slow. The little board which shows quarter you are about to play in swirls on like when the BBC in 'Top of the Pops'.



(As all T.V. pop programmes look alike, I'll bet international readers know just what I mean!) The sound is also nothing to write home about but it did not spoil my enjoyment of the game. I found Xeno playable than A'n'F's latest release of Core. So well done to A'n'F and lets have some more simple but enjoyable games like XENO.

Price: £8.95
Graphics: ★★★
Sound: ★★
Playability: ★★★★★
CCI Rating: Crisp

Nosferatu — The Vampyre

CRISP

Nosferatu (what a name! reminds me of Nosmo King — No smoking, geddit?) is the title of the latest arcade adventure from Piranha Software.

The story goes as follows.

You begin the game as Jonathan Harker, an estate agent clerk who has shown a first time buyer this wonderful enchanted castle. However, you place down the important papers and when you go to find them, they have disappeared. This is when you discover that the hopeful buyer is really Nosferatu — The Vampyre.

So you, Jonathan Harker, must find the title deeds to the place and escape from the castle in Wismar. Nosferatu walks the castle at night but in the daytime he sleeps but just in case you thought it was going to be fun, there are rats, bats and spiders which drain your energy. Not a really recommended place for a quiet vacation. You can examine most objects such as beds, cupboards, tables etc to try and

find some things that may help you in your quest. Some of them will give you a considerable advantage, so examine them carefully.

There are three parts to Nosferatu the Vampyre. In the last part of the game you have to lure Nosferatu to your room and hold him there until dawnbreak and then the spell will be broken.

Overall not a bad game at all really, if I did have criticism though it would be that you have to complete part one to enable you to see screens two and three. The first part reminded me of Fairlight it was entertaining and kept your interest. Both graphics and sound were good, although controlling your character with the joystick was a little tricky at times. This is surely a game that will appeal to more than the late night TV horror watchers. It demands a considerable amount of attention, and it is fun to play and is good value for money.

Price: £9.95
Graphics: ★★★
Sound: ★★★
Playability: ★★★
CCI Rating: Crisp

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MEGA REVIEW

C16

MEGA

Voidrunner and Hellgate — Ariolasoft

Voidrunner is another of Jeff Minters classic games and you can tell that Jeff is involved in it somewhere — with levels called things like yak, sheep, llama or camel — can't you?!

Voidrunner is a kind of centipede game but it is much more than that as well. First I must tell you about the games' presentation — incredible, a colourful noisy title screen, a large colourful intro to each level with a bit of music from Close Encounters of the Third Kind, whizzing flashing lights as you begin play, and a myriad of dots twisting and turning in the background. Even the 'game over' sequence is good enough to make you want to get killed just to see it!

The game is no disappointment either with arcade quality sound and graphics.

Your space ship is made up of four different pieces with a green mastership, all the other pieces are imperious to a certain kind of attack. On the first few levels you get the usual thing — aliens coming down at you at a terrifying speed and you blasting them while keeping out of the way of a few rockets and the ever present zapping vertical line, but then things change — you find yourself shooting DOWN on the aliens or firing outwards in all four directions, you never know what to expect.

There are 30 levels in all, and as in all Jeff's games you can start off in any of the first 16 levels.

Hellgate, the second game, isn't as good as Voidrunner, and it's hard to master being a derivative of the game Lazerzone.

You control a gun on each axis of a square and aliens appear at the centre of the square and move outwards towards you.

The graphics and sound are good but it's not as playable as Voidrunner, though still a good addition to the tape, and Jeff has kindly given the sgs number needed to start the game — if reset, letting people put in their own pokes.

A very good, value for money tape well worth getting.

C.K.

Price: £6.95
Graphics: ★★★★
Sounds: ★★★★
Playability: ★★★★
Rating: Mega

Classic Snooker

CBM 64/128 C16/PLUS 4

AUTHENTICITY CLARITY OF GRAPHICS ACCURACY

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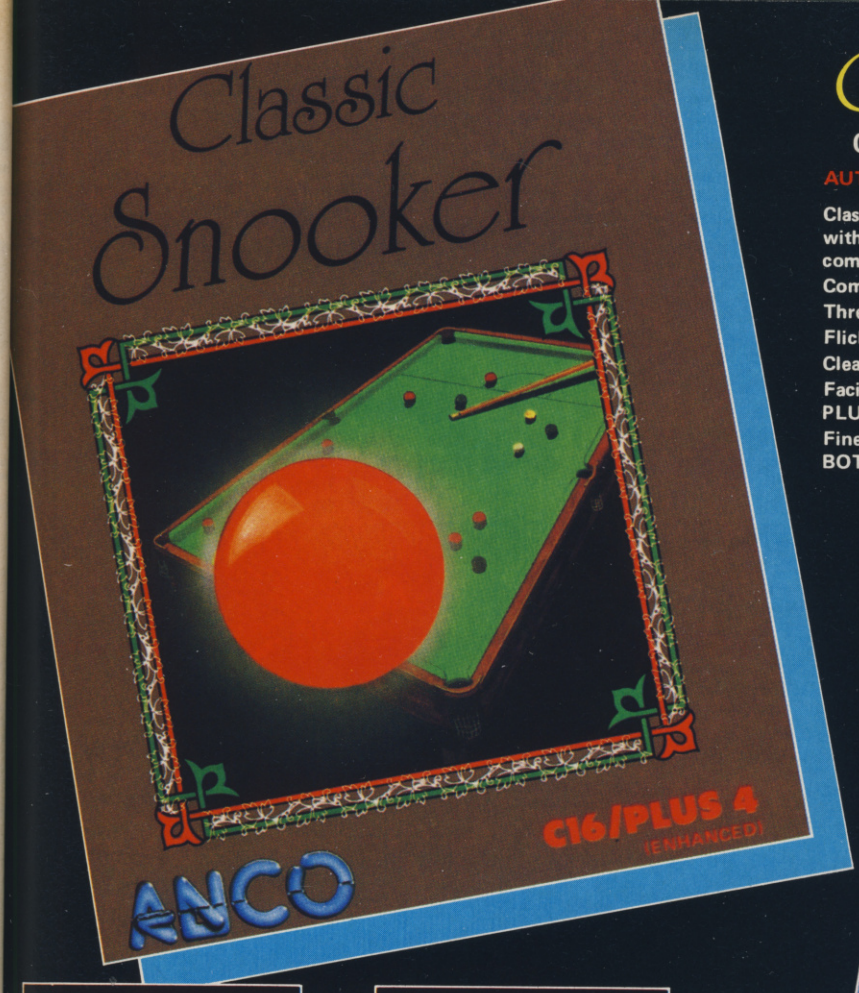
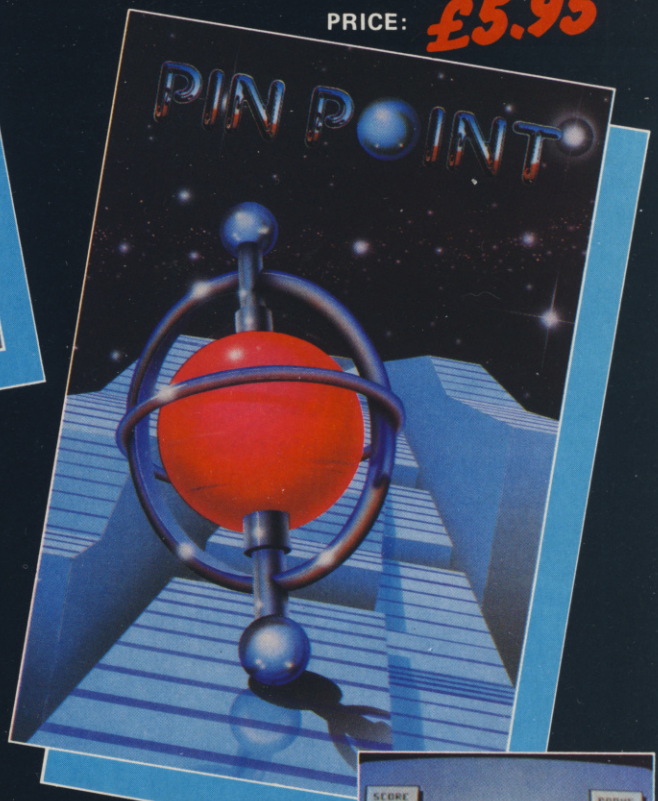
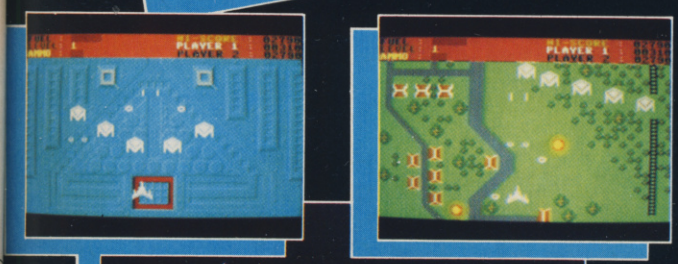
Fine control of the power of the shot and facility to impart TOP, BOTTOM or SIDE spin to the cue ball.

PRICE: **£5.95**







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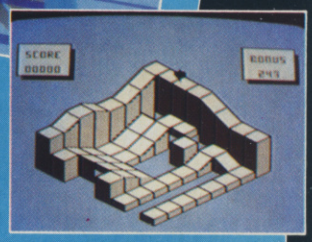

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For the PLUS 4 owners, the built in software like word processer and data base can now be used with a CASSETTE player. It also corrects the bug in the file manager.

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C16-PLUS 4 REFERENCE BOOK

The book lays special emphasis on the graphics, sound, music and machine code programming. The graphics cover standard, multi colour, high resolution, bit mapping, soft scrolling and raster interrupt. It's coverage of machine code is extensive and gives full information regarding KERNAL routines and how to use them in your own programmes. The book gives complete memory map, 7501 processor commands, C64-C16 comparison chart to enable conversions and all important KERNAL jump table. The subject under discussion is explained lucidly and illustrated by examples, often with line by line explanation.

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SEE DISKMATE AD FOR COMBO OFFER

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- ❑ For C64, 64C, 128, 128D (in 64 mode).
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- ❑ Built-in Unstoppable reset button.

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PERFORMANCE GUARANTEE

100% SUCCESS? RIVAL CLAIMS? WHO'S KIDDING WHO?
*Action Replay Mk 3 will backup any program which any other cartridge can backup – and more! It also has an unmatchable range of features. Consider 'Freeze-Frame' for example, which uses more disk space, saves at slower speed, has slower tape loader, has no built in disk fastloader, no picture, Sprite or restart features and costs £10 more than Action Replay. So who's kidding who? Buy Action Replay Mk 3. If you find that it does not live up to our claims return it within 7 days of receipt and your money will be refunded.

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Extending Action Replay's capabilities even further, this disk, contains a collection of tape to disk routines for a few newer games which load subsequent parts in a non-standard way. All the latest titles are catered for – more than any competing utility, and unlike other systems, ACTION REPLAY LOADS EXTRA SECTIONS AT TURBO SPEED. Disk includes file copy, disk backup and other useful utilities. Regular updates at low cost for use with Action Replay only. **Disk £7.95.**

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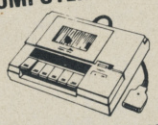

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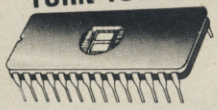

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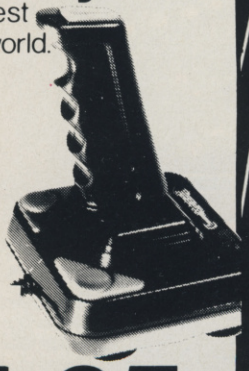

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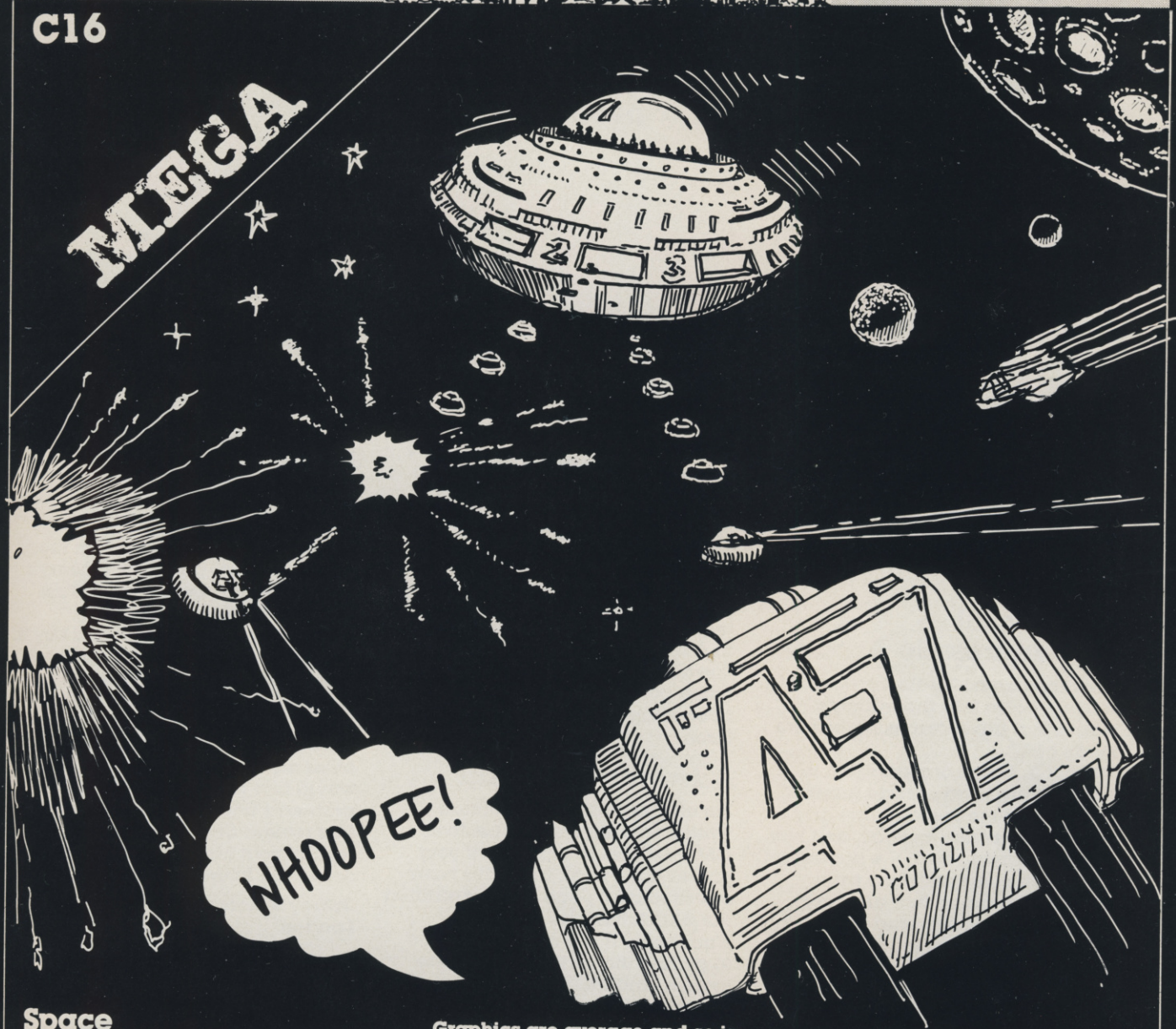
MEGA REVIEW

C16



Space Fiends/Liberator — Magnificent 7

Magnificent 7 are a funny little software house that are not very well known. They produced a really naff game, Pharoah's Tomb, and a really terrific, awesome one, Indoor Soccer. This double game tape is no exception. Space Fiends is about as naff as you can get and the other Liberator is truly... well, Mega, at least...

Space Fiends is a horrible version of that old game Phoenix. You must rescue the scientist trapped in a bubble on the right side of the screen by shooting the aliens as they fly away with them. As you might guess that isn't all there is to it — the pesky aliens drop bombs which on landing turn into blobs which kill you on contact. You can also shoot these but it is difficult and not worth the effort.

Graphics are average and so is the sound but the gameplay is absolutely sleep inspiring.

It is often said that one bad apple spoils the whole lot, but this is definitely not the case with Liberator. It's what all you C16 owners, who have been slavering over the '64 Uridium, have been waiting for! Yes that's right... a Uridium clone whoopee!

Your craft is fuelled and ready for action, are you up to it, can you stop the annihilation of mankind. You're sure as hell gonna try!

Your view of the battle is from above, looking down on the Anconian Mother Ship and swarms of her fighter pilots come flying at you. Turrets fire at you as you make your way to the Mother Ship reactor and you can shoot them out when you get to the reactor you must do some ace blasting to penetrate its shields close up, thereby gaining access to the next level.

You must see the graphics to believe them — metallix-looking blues and golds in true Uridium style — totally brill!

Though Liberator is really a kind of Defender or Scramble game it is incredibly addictive and is just the thing we've been waiting for (I hear tell another software house are doing a Uridium copy too and from what I've heard it should be good. Liberator will keep us fully occupied till then though).

If you're buying this because it has two games, forget it, Space Fiends is rubbish but if you're a fan of Uridium (like me) don't hesitate! Liberator's worth the cost by itself.

C.K.

Price: £6.95
Graphics: ★★★★
Sound: ★★★
Playability: ★★★★
Rating: Mega

Andy Moss, one of the UK's most famed adventurers, comments on all the many and increasingly popular aspects of ...

Adventure!

It's Official — Adventures Go Arcade

Greetings from Middle Earth, and to another delve into the intricate stories that adventurous heroes are made of.

First off, I have a confession to make. There is an arcade game that has got me hooked, line and sinker, broken my joystick, and has kept me playing until the proverbial cows have come well and truly home. It is a game that even my slow ponderous not-used-to-zapping reflexes have taken to most seriously. I refer of course, to none other than the mighty GAUNTLET. A true D&D adventure that has everything, from monster bashing, to treasure seeking, and more. Level after level of mazes, and more than a few traps, it really brings D&D into your home — almost too real for comfort. If this is the shape of arcade games to come, then I must seriously consider updating my joystick!

Thanks for all your letters, which have been on a wide range of subjects ranging from pleas for help to criticism (Jeffrey S. Marco please take note!) and space permitting, all will get answered within these hallowed pages.

This month there is Kayleth to look at, (loosely based on a story from Isaac Asimov's magazine.) Dodgy Geezers, another spoof from the Lever/Jones stable, and 221b Baker Street from US Gold.

Also this month I have included a personal rating out of 10 for each review which should leave you in no doubt as to my overall impression.

Adventure News

Mosaic/Virgin Tie Up

Mosaics latest release, The Growing Pains of Adrian Mole, will be published under the Virgin Games banner. Programmed by the Level 9 team the game follows another year in Adrians life, and is based on Sue Townsend's second book. The first game got good press, so it will be interesting to see how the sequel fares.

Adventure DIY Aid

For all you budding adventure writers who are using Incentives GAC program to implement your games, take note. Incentive have released a 50 page booklet entitled the GAC Adventure Writers Handbook. It is a complete guide to getting the very best out of the system, and includes some important tips on writing interesting stuff. At £1.25 its a good investment.

Newie From Level 9

Rainbird are set to release Level 9's new adventure entitled NIGHT ORC, and it will of course contain all the usual Austin brothers frills, in the guise of type ahead, huge text, humour and something new, digitised Pics. In Night Orc you play the part of the Orc in question, and get the chance for revenge on all those humans! A review as soon as I am sent a copy.

Letters

It was with great interest that I read your adventure pages in January's CCI. I thought your review of Tass Times In Tonetown most informative and shall go and buy it. However I do have a criticism and that is that you are volunteering hints on problems in your initial review, eg Moonmist, and the mirror puzzle. I am sure there are many other adventurers like myself who would like to be baffled by such problems first before reading a hint in a review! Could you therefore restrict your hints to just the help section in future.

Jeffrey S Marco
London

How on earth am I supposed to convey the type of puzzles that lie in an adventure, without mentioning at least one of them in the review! A review should be thorough enough to give the reader a good description of the product before parting with any cash, and if that means dropping a subtle hint on the way, so be it.

MORE ADVENTURE HINTS FROM ANDY MOSS ON PAGE 62 — — MIND FOREVER VENTURING!

I can't get past the gate in "The Magicians Ball", because the gold mouse won't unlock it.

Finn Mccan
Eire

Now then Finn, I suspect that you are at the start, or at least near it, because you don't go through the gate until much later. Use the mouse to open another door on the first level, where you will find a plank. Put it on the gooey mass and cross over into the tube of light which leads to the second level.

I hope you can help me. I've been playing Ultima IV for months and have come to a dead end. I need the Mantra of Pride, and someone called Faultless knows the answer. I fear I have killed him off. Can you tell me a) Where he is to be found, and b) what the Mantra is.

For all those Commodore adventurers without a disk drive, get one 'cos Ultima IV is not to be missed.

Steve Miller
Lancaster

First off, Steve, you should read the section in the Feb issue as I gave a lot of help about Ultima there, but anyway here goes. Faultless can be found in the town of Magincia, and the Mantra of Pride is MUL.

221b Baker Street
US Gold £9.99 cass £14.95 disk

When this package was first brought to my attention. I was more than a little interested, as it sounded quite a novel idea to emulate a successful boardgame. Well hasn't Trivial Pursuit done well? In this case the game in question is one that I have played on numerous occasions and enjoyed immensely.

The idea is a sort of Cluedo-type affair where the players take on the roles of Holmes, Watson, Lestrade and Adler and try to be the first one to solve a case. You throw a dice and move around the board into selected locations where hopefully there will be a clue waiting for you in the guise of a clue card. Once you think you know who did it, why, and with what, you rush back to Baker Street and announce your deductions.

So much for the board game, what about the computer version. Well the graphics have been done by Interplay, who have been responsible for some terrific adventures, like Borrowed Time,

and Tass Times, so that's good. There are 30 cases to solve, each one set out for you in a casebook, thats good too. Load up . . . play, and oh dear it's all a bit boring, that's bad. This is definitely one case of 'board game should not go onto computer without changing it a bit' syndrome. You press a button, and the dice number is chosen for you, you move the little figures (pretty though they are) around a 3D grid which has the buildings dotted about, you go in one, get your clue (it's very easy) and then you have to do it all again.

True, there are some very nice spot fx, and even a bit of digitised speech thrown in. A lot of what I call twiddly bits. But what is really lacking is the excitement that the board game generates, the game core. Its simply not there. For what this game costs, you're better off going out and buying the real thing, it's miles better.

Personal Rating ——————— 3

Portal
Activision 3 disk Set £23.99

You were woken up . . . why? Yesterday, or so it seems, you had blasted off from Earth on route for Cygni to spend a year observing the double star. Now you find yourself approaching Earth orbit with the ship preparing to land back at base. You start to become fully awake, and realise of course that it wasn't yesterday, that you left Earth, or the day before for that matter but many years ago. The long journey to Cygni was the reason for the deep sleep, but as you approach Earth, you realise something is wrong. You have been recalled, and revived by the ships computer for a reason . . . but what? As you sweep over the Western Hemisphere you grow alarmed. Where are the cities, the constant communications chatter, and the busy hubbub of traffic and teaming human life! This was the reason, the planet is completely and utterly devoid of all life. Earth is empty.

On landing you explore the green grasslands (that's all there is now) and find an entrance to a tunnel shaft. Everyone must have moved underground, you muse, but still the eerie silence prevails. Nothing but endless corridors and dead machines. No sign of violence, just . . nothing. This according to the computer is Chicago and . . . but what's this, a terminal with a ready light on! Nearby you see a manual with the words WORLDNET EMERGENCY OPERATING INSTRUCTIONS which you hastily read and realise that if you can communicate with the massive database it might tell you what has happened to everyone. You slip in a floppy disc that is with the manual and begin to probe into WORLDNET. You contact Homer, a living biological computer, who also wants to know the truth. Together, you set out to wake up the dormant memory banks of WORLDNET so that Homer can begin to remember, and maybe find a solution.

This is a game of such quality and atmospherre that to just give it a quick review just doesn't do it justice. I do not know how Activision keep on coming up with such original software. They had me converted when ALTER EGO was released, a truly innovative piece that, but with PORTAL they have gone one better.

It is billed as the world's first computer novel, and there is no doubt that it goes someway to that end. The story, as you battle through the computers faded memory slowly unravels piece by piece like pages from a book, and the fact that the background puts you in front of a screen in the story, makes it all the more chilling. Here you are (albeit in the comfort of your home) in front of your terminal fighting for answers with Homer.

Remember System 1500? The code cracking game? Well, that will give you an idea of the screen layout for PORTAL. Using the joystick you can roam around the 12 Dataspaces of WORLDNET accessing new data for Homer to interpret for you.

Each dataspace is connected by icons and you can access either

CONTINUED...

Adventure... CONTINUED

Central Processing, Homer, Psychology, Edmod (education), Life Support, Wasatch (genealogical information), History, Military, Psilink, Scitech, Geography and med10 (medical information). At first all the dataspaces are empty, bar one, you have to find it, and then slowly things will begin to happen. As the system wakes up again it will start to unravel the mystery, but it's only by your input that this process will carry on. The packaging is superb, with the WORLDNET manual included along with a colour chart and a novelette. With three discs to use this is a game to come back to, but if you have a disc drive save up and buy PORTAL. Its original, unique, and best of all brilliantly implemented.

PERSONAL RATING . . . 10/10

Kayleth
US Gold/Advent Int
£9.95

Before all you Isaac Asimov fans rush out to buy this adventure, a word of warning. Isaac Asimov didn't write this story, he didn't even have a say in the plot. In fact the only connection there is to the great man is that the storyline comes from a tale that appeared in a science fiction magazine bearing his name.

Having said all that though, Kayleth is pure science fiction, and if you like Asimov stories you'll like this. Well the plot anyway, because the actual implementation has quite a few faults to it.

I'll come to the moans in a moment, but let's have a look at the scenario.

You are a Zyronean who has dedicated himself to the destruction of the tyrant Keyleth, who has enslaved the planet in his obsession for Chromazin, a rare mineral. His androids force the people to mine the ore, whilst ruling the planet with a iron fist. You find yourself at the start upon a conveyor belt strapped in metal bands and moving closer to an electric charge from two steel claws. On top of all this, you have also lost your memory, all you know is that you have to survive.

This opening puzzle sets the scene in a very dramatic way and if you can overcome this little setback, there's plenty more in store. The story is good, no complaints there, but my main moan is that as lot of the pictures are animated, the computer cannot deal with the graphics and scan the keyboard quickly enough, so you have to pause before typing each letter. The other gripe is that Mike Woodroffe has continued to use the Scott Adams style (remember he was the guy who produced Scott's stuff for Adventure International) and I never have liked that presentation. When you examine places you get "there's something here!", and upon taking it nothing tells you what you have! There are some very logical problems and some lateral ones and all in all its quite tough. Its a shame that a good adventure is spoilt by thin text and no thought for the user.

You have been warned!

Personal Rating ——————— 5

Dodgy Geezers
Melbourne House
£8.95

What have Septimus (Little Ken) Griffin, Bullet Proof George, Tweedle Dee and Soapy all got in common, and more to the point, what did they have to do with the Long Ditton Spagetti Caper?

All the answers and more, are in Lever and Jones' newest creation Dodgy Geezers. Ever since I met these two talented Writers at the launch of their first game HAMPSTEAD I have been a fan of their work, because they always manage to find original and humorous plots. Dodgy Geezers is certainly their most ambitious project yet, combining red herrings and character interaction, with the sort of time related occurances, albeit in a much simpler format, that we have seen in some of the Infocom mysteries like DEADLINE. If you also remember that their games are Quill based, you start to realise just what can be achieved with DIY utilities given the right script.

Dodgy Geezers is all about villains. There are some good villains (that's you and Little Ken etc) who have been stitched up by some bad villains. Having done your time, due to having been grassed on by persons unknown you emerge into society bent on revenge. As you explore the town and its shady populance, you begin to sniff out a scheme. Along the way you meet up with some of your former associates, and by the end of Part 1 (there are 2 parts) you have to pick the best of the bunch to pull off a job that will put the lid on the grasser. This is where the timing is important, as certain events happen at certain times, and if you're not around, you'll miss something vital. I had to start over at least 3 times before I cracked the important bit right at the start.

A very entertaining adventure from a witty team. Well worth breaking into the piggy bank for.

Personal Rating ——————— 9

Adventure Help

THE PHILOSOPHERS STONE
To get out of the town, hypnotise the guards by using the amulet, which is given by the old woman in thanks for finding her cat Felix.

EMERALD ISLAND
The forest station has two platforms, the south one goes to the seaside, and the north one goes to the native village.

THE PAWN
The snowman cannot talk, but to get past him he needs to melt. The colours are warm, try feeling them.

That's it for this month, next issue I hope to have a copy of Activisions new biggie, Portal, a three disc job, maybe Infocoms Hollywood Hijinks, and all the latest news and views. See you then. Don't forget if you need help, or you just want to say something about adventures write to me at C.C.I. 40 Bowling Green Lane, London EC4

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THE PRAWN

G.P. Wayne had an adventure with some problems or some problems with an adventure. Magnetic Scrolls, creators of The Pawn, helped him out.

Never does a bus-ride seem more protracted than the one I take after buying a new game.

I sit, fuming at the geriatric performance of the bus-driver. I fidget with the bag. People start to eye me with suspicion. Inevitably, I open the package, reading the instructions thoroughly in order to get myself killed the second it boots up. So it was with Uridium, so it was with Mercenary and when, after a needed respite I purchased The Prawn, I had finished the novella which accompanied it by the time I got to my stop. And perhaps you will experience some empathy towards my suicidal reactions when, after repeated attemepts, the game kept crashing.

Now I am reasonably computer literate, so I ran a series of tests to establish a pattern of faults, but the resulting crashes confined themselves to The Pawn's software. Everything else worked as usual. Could be the disk, I reasoned. So I went back to the shop.

Here's an experience everyone must surely have had. You take a faulty product back to the place you bought it. The salesman looks at you with a broad mixture of contempt and pity, plugs in, turns on or, in this case, boots up the offending item and lo, custard runs down into your collar.

I must admit the chap in the shop was very cheerful about it. He promptly took out another copy and gave it to me, putting my copy back on the shelf.

"Will this cure it", I asked stupidly.

"No", he replied, flatly. "It's your disk drive alignment". His tone brooked no argument. I took another bus.

The alignment? That the man in shop had blanched at the mention of fixing; the alignment was nothing more than a simple end-stop from which the stepping motor measures its movements. I moved it. No effect on The Pawn, which still wouldn't run, or on my other software, which would. These tests took days while the object of it all was only to get the The Pawn to run. What I did next was therefore born of desperation, the like of which I hadn't experienced since writing my first program.

I never write to newspapers, never ring up TV or radio stations, and never try to contact authors and the like, so I was pretty surprised to find myself talking to a man at Rainbird about my problem. And more surprised when, in the midst of being nice to me, he told me he was very interested as the company were getting reports of similar faults from the USA.

This was music to my ears for it confirmed some small evidence of sanity. "Listen", he said. I did. "Can I give your phone number to the programmers who wrote the game? I think they might like to talk to you".

I agreed, curious in any case to meet the authors of a sucessful game like The Pawn, and it was certain to be more interesting than watching it crash repeatedly.

Later that day, the phone rang. The voice identified itself as Roddy from Magnetic Scrolls, originators of The Pawn. I described the symptoms and ran a couple tests while he conferred with others at his end. Finally, he asked if it would be possible to see the machine in action.

They boot up The Pawn on my system. It runs the first screen. "It does that", I say. "It never gets past more than two or three, though." They are up quickly to the fifth screen. More screens. "It must crash soon."... "Hey, I've never got this far."

I have to turn away so as not to spoil my own exploration of the game.

"How about turning it off and booting up again?", I suggest to the wall in front of me, hoping my strained voice isn't giving too much away.

When the system is switched off I turn round.

The second time it behaved perfectly, crashed, I mean. It froze the first hi-res screen as it scrolled down. I breathed a big sigh of relief.

By now, a few of you who own a copy of Lord of the Rings may be thinking: hang on, that's what happens to me. Indeed, the intrepid chaps from Magnetic Scrolls produced a disk of said game and booted that. It didn't finish loading the first time and the second attempt resulted in a crash after accessing the disk for a picture. This problem appears only to affect software running split screen hi-res graphics. Tricky.

Ken produces another '64 from about his person and asks me if they could possibly take mine away to examine the fault in more detail. I can hardly believe my ears: I buy some software, my computer won't run it. I ring the software house and the writers bring me another computer on which to play their game. Customer support as it should be!

But I pause for a moment, a short one. There must be a catch and I spot it.

"Yes, of course", I reply guardedly, "So long as I can keep this one long enough to finish The Pawn". I had visualised how truly awful it would be if they took their machine away while I was deep in some cavern or half-way across a rickety rope bridge, unable to continue on my own machine.

Ken and Roddy exchanged glances. "Er, no", says Ken, "we couldn't possibly leave it with you that long"

He did smile when he said it, but I know a gauntlet when I'm slapped with one.

"Ok", I muttered, no longer concerned with the affairs of this world. Donning a simple loincloth and carrying only a small earthenware jar of a secret ginseng extract I set off, bound for Kerovnia.

I cracked on Day 3, my pride in tatters. I had 160 points, no idea what was going on, and things were getting weird. I could get no further. So I threw away my tatters and rang Magnetic Scrolls. I described my situation to Roddy and told him how many points I had.

"Well", he replied, "you're doing better than the mere mortals." Was I? That made me fell much better.

"But do you know what you're doing yet?" he probed.

"Not really, well, that is..." I squirmed, not liking to admit to anyone I didn't know what I was doing.

"Did you talk to Kronos?"

"Yes. I took the note."

"Nothing else?"

"Oh." I was getting the idea. "But he never re-appears after the first time you meet him."

"That's right", Roddy replied. Back to square one.

CONTINUED ON PAGE 70

COMMODORE

BUSINESS and AMIGA USER

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FEBRUARY 1987

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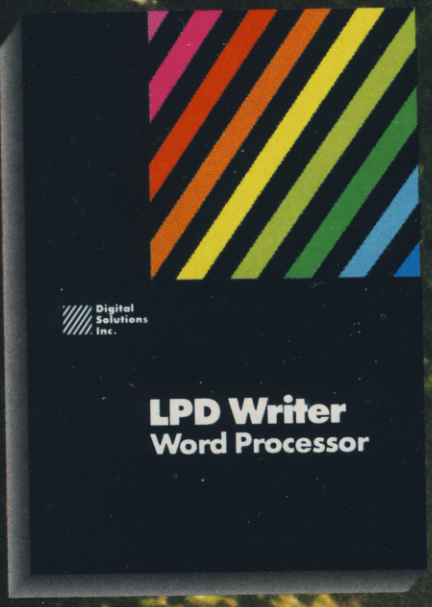

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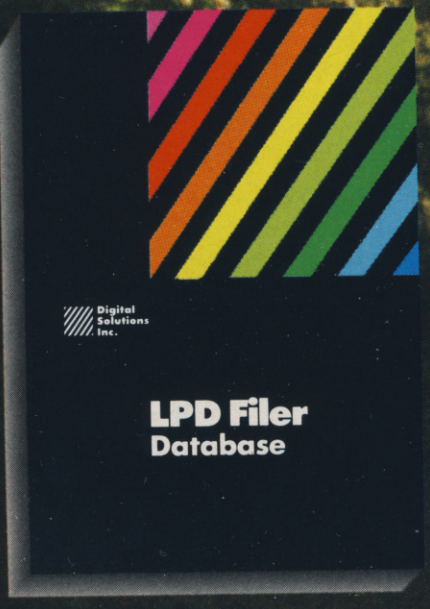

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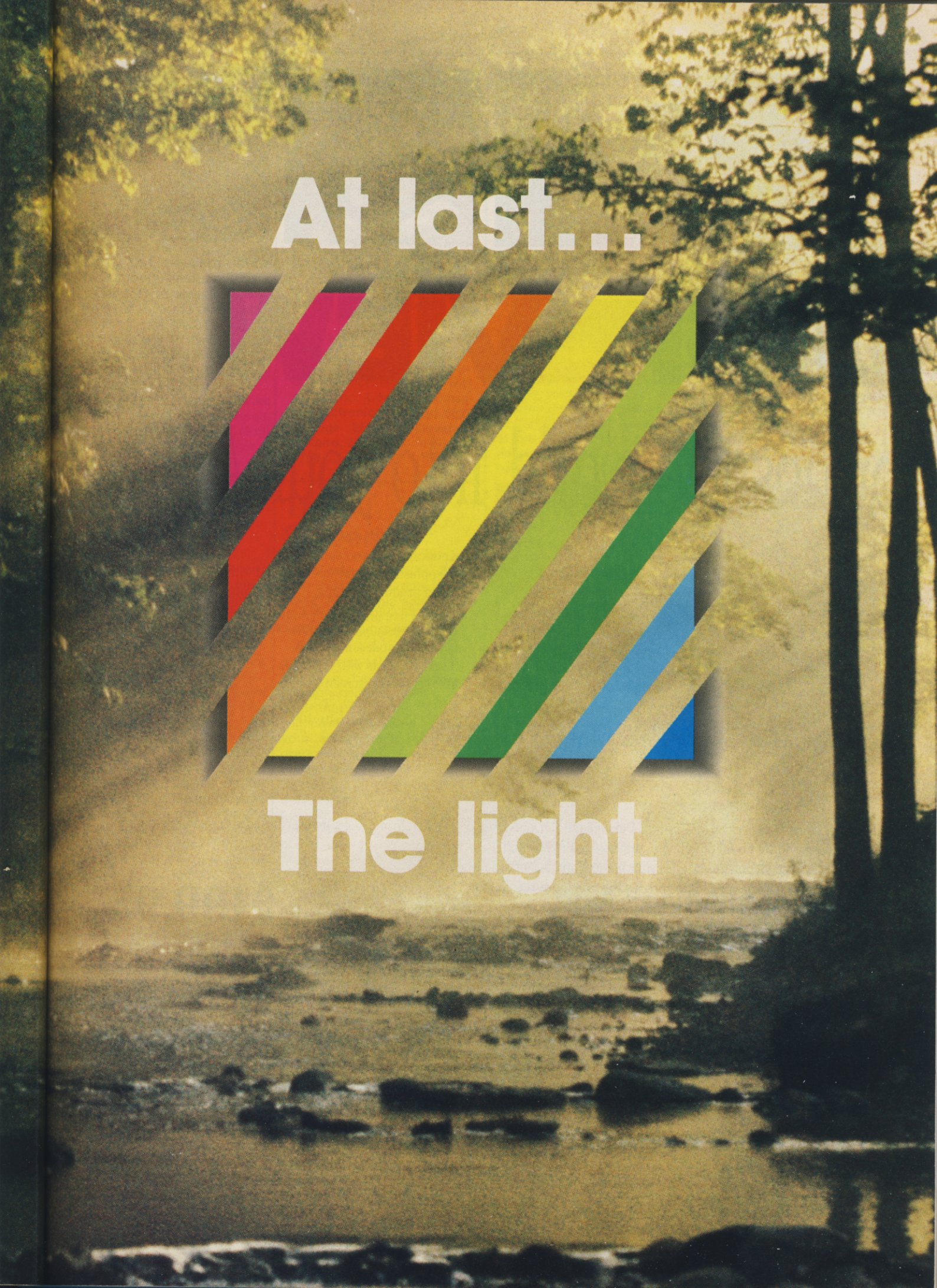
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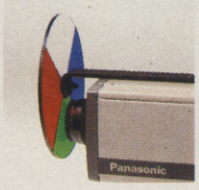

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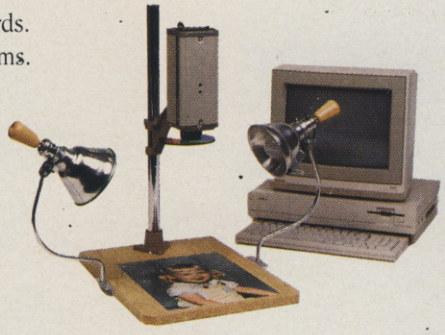

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* Digi-View software version 2.0 (or newer) required to use color camera. For maximum resolution use monochrome camera with 2.1 interlace. High-res color modes require 1 Meg expansion RAM.

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Amiga RAM

Starpoint Software has released a 256k display RAM card for the Amiga. The card installs behind the front panel, expanding available memory for programs and graphics to 512k. This low cost alterntive to the Commodore-Amiga 1050 card comes fully assembled in a sturdy metal case, with a one year warranty, manual and schematics. The suggested retail price is $115 US, shipping $4, outside of USA $6.

Contact: Starpoint Software 6013 Macks Gulch Road, Gazelle, Ca 96034-9412. (916) 435-2371.

Comspec Developments

Comspec, of Canada, regarded as a leader in the field of AMIGA peripherals are to launch a new 20 mg hard disk drive. You can buy a Comspec controller card and plug in your own drive. The drive comes off the expansion part or you can plug it into a Comspec RAM card. The launch date is early March and price expected to be under US $1000. Comspec already produce a successful 2 meg RAM expansion. **Contact: Comspec/Electronics 2001 Ltd.,5529 Younge Street, Willowdale, Ontario, M2N 5S3. (416) 299 2700.**

RPS Announces Another New Promotion

The latest in a series of sales promotions launched by computer media specialists, RPS, offers customers two gifts with purchases from its High Focus range of diskettes.

For purchases of three boxes of diskettes, customers will receive a full function solar-powered credit card size calculator. Customers purchasing ten boxes of diskettes will receive a top quality personal stereo with headphones. Both gifts will be handed across the counter at the time of purchase, or despatched with products ordered.

Since the launch of the High Focus range — the unique high quality, isotropic coated diskette — RPS claims to have been making major in-roads in the UK market as a result of product quality, competitive pricing, and an aggressive promotional campaign.

"RPS is fast becoming a major force. Last month's sales gave us a record 10% market share — our high quality brand is really taking off states Chris Poulton, business manager, RPS.

Contact: RPS 0582 867222.

E.A's Sierra Link

Electronic Arts has announced through its affiliated label program that it has reached an agreement with Sierra On Line, Inc. as the company's exclusive distributor of its Amiga compatible software products.

"As a pioneer in software entertainment, Sierra On Line brings a full spectrum of fine Amiga compatible programs to the Electronic Arts' affiliated labels program", noted Randy Thier, Director of Affiliated Labels at Electronic Arts.

Thier noted that within the next few weeks, Sierra On Line will introduce five products under the new agreement. These include King's Quest I, II and III, the best selling trilogy in 3-D animated adventure games; Space Quest, a science fiction parody adventure game; and Winnie The Pooh in The Hundred Acre Woods, a children's software product co-developed with Walt Disney Productions.

Before the end of the Spring, Sierra On Line will introduce three additional titles including, Black Cauldron, a Walt Disney produced 3-D animated adventure game for children; Police Quest, a 3-D animated adventure game with an adult theme; and Donald Duck's Playground, a children's program also produced by Walt Disney Productions.

17,000 Screens!

Microillusions has announced the release of FAREY TALE ADVENTURE. Created by David Joiner, this adventure game is the first in a series of "Hi Quality" adventure games.

Farey Tale Adventure is a game, that Microillusions claims is beyond comprehension, beyond belief, it is a game that is so incredible you will never be able to leave your computer again. Programmers have been working the past six months non-stop to create a new world. "God did it the first time in six days, but he could only give Microillusions a couple hours of consulting time a week?". This new world consists of over 17,000 screens. You journey to underground caverns, mazes, forests, deserts, snow covered mountains, lakes and even the astral world. Speak to characters, fight mnsters and evil wizards. Farey Tale will take you weeks perhaps even months to explore, and there are several different ways to end the game.

WARNING: Microillusions has notified us that "the use of this product may cause sleepless nights, lack of appetite and family unrest. Prolonged use may cause loss of job, divorce, or mental breakdown. Microillusions assumes no responsiblity. Play at your own risk." Watch out! U.S. Price $49.95.

Midi For Amiga!

Music is an ideal application for the powerful Commodore Amiga, but for the serious musician a MIDI-interface is essential.

Supersoft have been appointed European distributors for the MIDI FOR AMIGA interface from Skyles Electric Works of Mountain View, California. Compatible with currently available MIDI-based software for the Amiga, the Skyles interface has *two* MIDI OUT ports, one MIDI IN, and a MIDI THRU).

Supersoft have established a reputation for music hardware and software with the MICROVOX sampler and RHYTHM KING drum machine on the Commodore 64, and it wouldn't be surprising if their next music product is for the Amiga. Existing music products for the Amiga rely extensively on the built-in sound facilities which, though excellent by most criteria, are not quite good enough for the recording studio.

MIDI FOR AMIGA costs £43.43 plus VAT (£49.95 inc VAT) and is available direct from Supersoft.

For further details contact Peter Calver on 01-861 1166.

Amiga and PC Developments

In the US Commodore has launched its much-rumoured two new AMIGAs — the 500 (previously known as B52) and the business-level 2000. The general opinion was that 'both are winners'.

The 500 looks like the now well-established 128 except that on the right side, at the back, it has a 3½in drive. It is 512K and has an external power supply. You can flip open the cover and there is a slot inside to take a 1.5Mg expansion board and a clock calendar option which will be available from CBM. You can add 2Mgs internally but chip memory stays at 512K.

The Agnes graphic chip has been enlarged and is no longer rectangular but square. Unflatteringly, it is called 'Fat Agnes' and provides a number of improved graphic facilities. None of the present peripherals for the A 1000 will fit on the new machine without a bus extension as the positioning ports are not on right side but hidden under the computer. There is also available a new 'high persistence' monitor, the 2080, which seems to eliminate flicker entirely. The price of the 500 in the US is expected to be $595.00.

While the 500 is not thought likely to hit the US market till late May or June, the 2000 is for marketing early spring. It has a built-in power supply, separate detachable keyboard and an internal drive. However, there is also room for a 5¼in drive and another 3½in drive with mounting and controller already in place. This means that any second drive can be used as a PC. It has seven slots — 3 for PC — and a facility for a second controller for a second hard drive. The 2000 also has two new ports for video inputs such as Genlock. Both of the ports have 'reversed sex' so they are normal IBM style ports. It takes 8Mgs of ram on one card on 1Mg chips, which most experts point out, is a rather expensive way of achieving this configuration. It has a Sidecar — PC facility — built in and it is thought that CBM's next in this line will an AT version which will have a AT board and a 3½" 20Mg drive. There are some reports that the CBM is considering selling its AT AMIGA cards to other manufacturers. This new top model AMIGA greatly impressed at the recent Las Vegas CES show including loading Deluxe Paint, previously taking 10 seconds, in just one second. Interestingly, both new AMIGAs have Kickstart not Workbench in ROM. The 2000 predicted price is $1495.00.

CBM's problem is still how to market the AMIGA for even these two new models do not fit into any obvious existing sales level. When Irving Gould, CBM's chairman, was asked where they would sell, perhaps in national store chains, shook his head and said, 'We've got a lot of people fighting about that'.

The major professional markets look to be in the sound and vision fields. Film and TV studios are beginning to catch on that they can use AMIGAs far more cheaply than usual video or graphics sources. Universal Studios in Hollywood has bought 40 AMIGAs and the Disney Studios have also acquired a substantial number. The purposes of studios seems unlikely to be satisfied with 512K and the Comspec 2Mg expansion boards are proving a popular add-on for extra memory.

Another buyer is the Toronto Police Dept and US national TV on December 29th saw TV versions of SF 'Amazing Stories' all with the special effects created on AMIGAs.

With the AMIGA's growing acceptance and success some publishers of software and books are being forced to eat their doubting words. Abacus who specialize in computer books were, just a few months ago, publically saying 'You won't see any AMIGA books from us'. Now they are publishing four.

In the UK, CBM took the 'Which Computer' business show to launch its AT compatible PC40, priced at £2,247 with 20Mg hard disk. CBM also announced 20% cuts in its PC10 and PC20 range to bring the cost of these compatibles down to £997 and £1,397 (plus VAT) respectively. The PC10 has 512K, internally expandable to 640K and the PC20 features a single double sided, double density 360K floppy drive and 20Mg Winchester hard disk. Also getting first public viewing at the 'Which' show were AMIGA products: Genlock (already reputed to have sold 300 systems including the Ariadne software); PCLO, a printed circuit package; and Alegra, a 512K ram pack (see review in this magazine).

COMMODORE BUSINESS AND AMIGA USER

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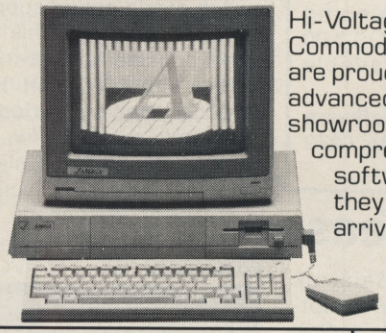

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File Security

Bristol Software have released 'Secure'.

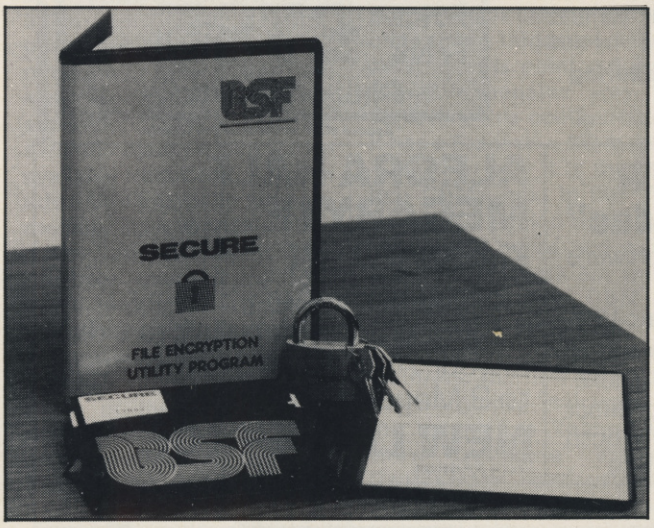
SECURE is a file encryption utility program, which prevents unauthorised access to any file on disk, whether a simple data or text file or even a complete application program. It is ideal for those people who have information contained in data files which may be the subject of the Data Protection Act.

Despite the complexity and sophistication of the algorithm employed, the accent of SECURE is on simplicity of operation. Exactly the same user-defined password routine is used for encrypting a file as is required to restore it later.

'With the experience of software protection we have gained from our Software Key over the past three years, we have been able to develop a very simple, but secure method for the PC user to protect files from prying eyes and fingers' said Bristol Software Factory Sales Director, Richard Maugham.

Starting from £49.95 including VAT, SECURE is available now for all IBM PCs and compatibles running under DOS 2.00. A DOS 3.00 version will be available shortly.

Contact: Bristol Software Factory, Telephone No: 0272 629790.



Silence Please

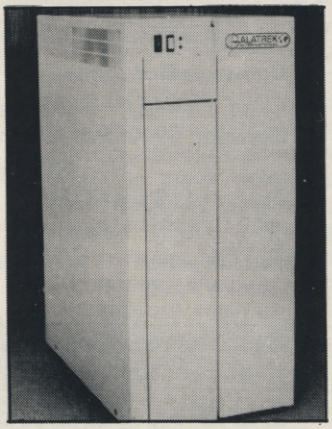
Before the new Galatrek VHF2500 U.P.S. (Uninterruptible Power Supply), U.P.S. were bulky and so noisy over 1Kva that they had to be housed away from people.

A U.P.S. saves costly errors, down time, programme degredation and even hardware damage as raw mains electricity is suprisingly often a major source of difficulties. Galatrek claims to eliminate this problem area and facilitate the completion of work to time.

The Galatrek VHF2500 U.P.S. is silent, small and has clean computer room lines and a satin pale cream finish. Rated at 2.5Kva, the VHF2500 can operate into non linear loads where previously U.P.S. of double the load rating had to be used. It can operate into switch mode power supplies without derating. This can effect considerable saving.

The VHF2500 can have extended battery periods in matching cubicles for any number of hours. Galatrek offer full consultant facilities in assessing load needs.

Contact: Robin Koffler on 0492-640311.



A-Talk Plus

Felsing Software has announced A-TALK PLUS, the first terminal program for the Amiga that supports Tektronix[1] 4010/4014 graphics emulation.

A-TALK PLUS supports all the features of the Tektronix 4010, 4014 and 4014-1 computer display terminals. In addition to the standard Alpha, Graph and Graphic Input (GIN) modes, two Enhanced Graphics modes are supported: Point Plot mode, and Incremental Plot mode.

Vector line formats include solid, dotted, short-dashed, long-dashed and dot-dashed lines. All 4 character sizes are supported with custom Amiga fonts. Hard copies of screens can be obtained for all printers supported by Amiga Workbench 1.2 in response to a "Make Copy" signal from the host computer. Screens can also be stored locally in IFF or Aegis Draw[2] format to be subsequently manipulated by other programs. Aegis Draw format files are produced at the highest Tektronix resolution of 4096 by 4096.

The standard 640 x 640 pixel screen size of the Workbench interlaced display can be increased to a maximum of 70 by 440 pixels for additional resolution. Vector and Alpha drawing keep up to 19,200 bauds. Interface Strap Options for CR effect, LF effect and GIN terminators are simulated with selection gadgets for maximum flexibility.

Besides Tektronix graphics emulation, A-TALK PLUS includes all the communication tools found in A-TALK 1.1.

KERMIT, XMODEM/CHECKSUM, XMODEM-CRC file transfer protocols and plain text upload/download are available as well as full emulations of VT100, VT52, H19, ANSI and TTY, including 132-char/line mode, and graphics fonts.

For automatic login, a powerful script language is provided with a phone number directory, and a separate function key definition table for each dialled system. Also included are a multi-tasking spooler, capture buffer, a custom Voice option, full control of all communication parameters and support of more than 10 modem types.

A-TALK PLUS is available at a suggested retail price of $99.95. Site licenses are available.

Contact: Felsina Software, 3175 South Hoover Street, Suite #275 Los Angeles, Ca 90007. Tel: (213) 747-8498.

IEEE Interface

Commodore is now fully equipped to achieve penetration into the scientific laboratory test equipment market with the Commodore Amiga following development and successful field test of an RS232 to IEEE interface.

The IEEE interface, linked to the Commodore Amiga, can replace the conventional computer solution, such as Hewlett Packard, at up to one third of the cost.

Commodore have a long history of success in this area as the Commodore PET has been the accepted automatic test systems computer for the past ten years with more than 100,000 PETs in the field.

A Commodore Amiga 512K system with IEEE interface may be integrated with Spectrum analysers, network analysers, electronic balancers, multi-meters, high grade pen plotters and printers to provide a high quality scientific programming test station.

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The AMIGA PAL Genlock 8600

The AMIGA has always been heavily promoted as a personal computer that allows full interaction with video. However, there have been some very heavy delays in making available the necessary hardware. The video input can either come from a stored source such as a VCR (video cassette recorder), video camera (camcorder) or a television. The high operational speed of the special graphics hardware together with a wide colour palette have made all this possible. But what does the word GENLOCK mean?

I'll go back a little further and start with another word that may be unfamiliar — *RASTERS*. A *Raster* display is one of the many different methods of obtaining an output display from a computer — some others being vector graphic display, liquid-crystal display, gas-lasma, etc. A *raster* is a parallel array of horizontal lines into which image data is inserted, the same technique is used for television displays. Unlike a vector graphic display where the image is drawn on a point-to-point basis, a *raster* display is made up of a series of regular horizontal lines drawn from the top to the bottom of the CRT (cathode ray tube) by a beam of electrons. The electrons are generated by high voltages at one end of the CRT, accelerated and then focussed to positions at the other end which is coated with a special group of chemical compounds sensitive to impact by electrons. This group of compounds are known as *phosphors* (they are chemically salts containing the element Phosphorous as their non-metallic component). When a phosphor is struck by an electron it emits energy in the form of light. As the electron beam draws a horizontal line it illuminates tiny dots of phosphor on the screen display end of the CRT. A grouping of these dots comprises a *pixel* or *picture-element* which is the smallest accessible unit of the *raster* display.

Television and the display of the AMIGA employ *raster* graphics and this forms the basis of the intermixing of images. *Genlock* is a technical term coined to describe an external video signal to be synchronised and displayed simultaneously with the computer's video output. *Synchronised* since the computer display hardware has to be able to operate at the speeds common in video and television applications. This is the main reason why a machine such as the Commodore 64 and Commodore PC-10 cannot be used in this way because of the limitations of their hardware. if the two video signals were not synchonised then the resulting screen display would be unintelligible to the viewer. The mechanism of the synchronisation is done through the medium of reference signals within the video signals themselves and all that a Genlock device does is to ensure that these reference signals are constantly in phase with each other.

The 8600 PAL Genlock device from Interactive Ltd allows the user to overlay a background video that is being derived from a video source with text, colour graphics or animation graphics generated on the AMIGA in real time. The unit also provides a *chroma key* functions which allows a foreground colour to become transparent for the video background. The package consists of the Genlock unit, three connecting cables, a disk containing several items of software discussed later in this review and a 20 page manual.

The manual makes no pretence at providing any detailed discussions as to the creative use of the Genlock — it fufills the primary functions of connecting and setting up in addition to providing a technical reference section. I was also pleased to see the inclusion of a section dealing with warranty and support — two subjects that seem to escape the minds of many hardware retailers these days. Connection of the unit is simply a matter of connecting the three cable — one replaces the existing monitor lead which now runs between the Genlock unit and the monitor, another fits into the A1000 parallel port and runs to the Genlock unit while the final cable runs between the Genlock unit and the A1000 video output port. The Genlock unit itself is contained inside a metal case colour-keyed to match the A1000. The design of the unit permits its stowage underneath the rear of the system box completely out of the way and without any interference to the storage of the keyboard — a very thoughtful touch.

The software on the system disk contains five elements. These are:-

a) A library of routines that allow the programmer to access and control the Genlock unit from Amiga BASIC, C, 68000 assembly language or indeed any language capable of gaining access to an AMIGA library.

b) A routine to define an AmigaDOS *device*, in this case a *player-device* which allows control over an external video source such as a laser disk player using RS-232.

c) Interface files — and AmigaBASIC *.bmap* file and *genlock.lib* file together with C and 68000 assembler header files named *genlock.h* and *genlock.i* respectively.

d) A demonstration application named *VideoShow* which allows Genlock

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control and player control to be synchronised with the display of graphic images created using other applications such as Deluxe Paint, Aegis Images, Deluxe Video, Aegis Animator and Aegis Impact.

All that is required of the user is to install the various components from this disk into the relevant directories on their Workbench disk. Ariadne Software Ltd, the providers of this software have made this very easy for the unskilled user by means of an automatic install program which is run from the Workbench environment.

I found the *VideoScript* demonstration application to be the most interesting. This allows the creation of a high-speed *slideshow* with special effects such as fades being available. The timing of these slides is accurate to within 10 milliseconds which is more than adequate for synchronised titled sequences. In addition to this there is also the ability to synchronise the video sequences with the mouse for interactive presentations. The *VideoScript* control file relies on simple commands such as:-

END terminate script file execution
REPEAT return to beginning of script file
DELAY (n) Wait (n) hundredths of a second
MOUSE wait for left-hand mouse button click
EXEC (command) execute other AmigaDOS commands

The overall feeling for the Genlock driver software is one of accessibility — the user is unlikely to be constrained in this area irrespective of programme skills.

There are four different operating modes of the Genlock unit. These are:-

Mode	Description
0	Colour Transparent
1	External Picture Only
2	AMIGA Picture Only
3	AMIGA Overlay

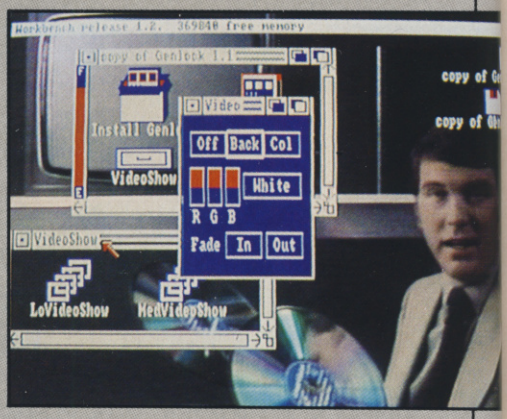
Mode 0 is where a video frame(s) from an external source are displayed through user-selected foreground AMIGA colour. Mode 1 is essentially the same as Mode 0 except that only the external picture is visible on the screen. Mode 2 is the opposite of Mode 1 and only the AMIGA picture is visible while Mode 3 has the external picture replacing the background of the AMIGA display. In addition to these modes there is also the facility to blank and/or fade the external video under software control.

When the system is first powered-up with the Genlock unit attached there is a noticeable screen flicker until the video signals synchronise after the loading of the *Kickstart* disk. If an external signal is then passed to the Genlock unit, the hardware detects the presence of the incoming signal and automatically synchronises the signals. Removal or interruption of the external signals causes the Genlock unit to revert to the AMIGA synchronisation signals. Signal pulse loss recovery is both automatic and very fast.

Synchronising signals may be accepted irrespective of the supply of equalising pulse, the input synchronisation is regenerated and fed to the output port thus a requirement for sync masters can be controlled by the user. The stability of the genlock images are very dependent ont the quality of the input signal from the external video source. The Genlock unit monitors both the frequency and phase of the input signal for variations in these two parameters and compensates for both. However, there are limitations on this process. In situations where the input signal is of poor quality because of an incorrect mechanical condition in the source system such as a worn tape that has stretched or a dirty pickup head then this is reflected in a poor quality image. The situation is rather analogous to taking photographs with a Hasselblad camera using life-expired cheap photographic film or playing an LP through a Bang and Olsen system using a knitting needle as the stylus.

The RGBA output from the Genlock unit is of sufficiently high a standard for it to be passed directly to broadcast quality devices. For those users with more mundane equipment, the composite video output is adequate for VCR use. The audio input to the recording VCR can be taken either direct from the AMIGA audio output in stereo, direct from the external video source or from a separate sound mixer unit. No sound mixing facilities are provided by the Genlock unit. However, note that there are two video output signals available from the Genlock unit which, together with the audio options, broadens the scope of the device considerably.

So what sort of uses does the Genlock unit have? The answer is quite a lot since the number of options appears only limited by human imagination. The whole basis of this hardware revolves around the conveyance of information and since this is best assimilated in visual form then the option to extend a personal computer into the world of video has some very far-reaching ramifications. Ariadne Software have made some very preliminary suggestions Interactive Video Training, Simulations, Interactive Point-of-Sale Equipment, Advertising and Product Display, Information Terminals, Video Production, Video Titling, Computer Animation, Video Databases, Security Systems, Industrial Video Control.



There is no doubt that the AMIGA/-Genlock system heralds the dawn of a new era at the personal computer level. In terms of overall cost measured against ability this combination has no direct competition. System configuration is very easy, free from problems and together with the options provided for a programmer leaves room for few complaints. There was only one area where I was unhappy — the loss of the Parallel port, although this could be overcome by the use of a piggyback IDC connector on the cable from the Genlock. I would strongly suggest that the manufacturer produces a Genlock for NTSC video input/output. The reason why I mention this is due to the very limited facilities that the Commodore NTSC Genlock device provides. This unit, which is designed and built in the U.K. also has a far superior display to the Commodore Genlock. In short, the 8600 PAL Genlock has produced the goods in this area irrespective of program skills.

Technical Specifications

Bandwidth	Composite	-3 dB 5.5 MHz
	RGBA	-3 dB 5.5 MHz
Locking	Horizontal	15.625 KHz
	Vertical	50 Hz
	Subcarrier	4.43 MHZ PAL
Timing	Horizontal	Co-incident with input
	Vertical	Co-incident with input
	Clock	Phase-inlocked with input
Connectors	Video IN	BNC 75R 1V p-p composite
	Video OUT	BNC 75R 1V p-p composite
	AMIGA	25-pin 'D'
	RGBA & TTL Sync	9-pin 'D'
Control	Display Selection	25-pin 'D'

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The AMIGA in Monterey

At 9.00 a.m. prompt on the Wednesday, the conference started with Frank Leonardi providing details of the financial turnaround of Commodore as well as revealing some of the future plans of the company. Leonardi is responsible for North American sales therefore it was necessary to take account of the fact that he was talking from this point of view and not for other sales territories. The 6502-based products will remain in production with continued expansion such as 3.5 inch drives and RAM packs. On the PC-compatible front, the 80286 PC-AT machine would be launched into the EEC sector during December 1986 while the 8088 machine would be launched in the USA at the same time. Turning to the 68000 machines, viz. AMIGA, Leonardi claimed that between 120,000 and 150,000 A1000's had been sold worldwide — I use the word *claim* since a discrepancy of the magnitude of 30,000 units seems to indicate some loose accountancy. The announcement that the **GENLOCK** device was not in production was greeted with cheers from the audience as was the statement that the newly launched APPLE IIGS was not perceived as a serious threat to the 68000 products.

The second speaker was Carl Sassenrath who gave a historical outline of EXEC. Several questions were raised on the subject of memory managements, or rather the apparent lack of it! The reply came in the shape of the fact that the A1000 is not a *virtual machine* and treading on locations $000004 and $000020, deliberate or otherwise, will cause a system crash. Using the resources of the 68000 processor directly such as *interrupts* and *exceptions* require a detailed knowledge of the system although one tip passed on to listeners was to run in 68000 *supervisor* mode with the stack serving as an interrupt-list.

The following speaker from the platform was the familiar Tim King, formerly of METACOMCO but now a leading light in PERIHELION, a company which we will be hearing a lot of during 1987. His presence, by my reckoning took the total number of attendees from the UK to four. Tim provided an overview of AmigaDOS and stressed the often overlooked importance of *locks* — programmers tend to forget they are dealing with a multi-tasking system. Further useful tips for programmers were revealed such as the undocumented call on LOCK — a null ("") name will give the current directory, or the *serial* device does not reply with the end-of-file character and this can be solved by using the METACOMCO Toolkit (reviewed in the last issue) console/serial driver.

Electronic Arts, the well established AMIGA software producers provided the next speaker Dave Maynard. He stressed the importance to delegates of using a common hardware base and the security of a reliable electronic mail system where programmers were working at locations remote from the control point. The benefits being a large measure of cost-effectiveness due to the use of shared code and experiences with the A1000. The point was made that an average serious application for the A1000 accounted for 2.25 man-years in programmers time. No doubt such a figure may horrify some British & EEC software houses but I would question them as to what their own ideas are on a multi-tasking 68000 machine in terms of development times.

Dave also described a software tool used heavily by Electronic Arts named DDT (presumably lifted from its namesake on CP/M 2.2 — Dynamic Debugging Tool) as well a some of the programming techniques and problems found with the A1000. For example, the dangers of uninitialised C language pointers sending structure pointers into low memory and stamping all over important areas used by the system software. DDT checks the first 100 memory locations for this. A discussion of problems with *allocmem* and *freemem* routines and how DDT monitors these continued for some time. Unfortunately, DDT is not destined for sale (yet!), the benefits using this are clearly sufficient for Electronic Arts to maintain a lead over the competition, hence the decision.

The next speaker was the petite Carolyn Schepper of Commodore, West Chester who tackled the *heavyweight* topic of the whole conference, **IFF**. This is a standardised file structure for easy transfer of graphics or audio data between different software applications and was initiated by Electronic Arts and Commodore. This gives the benefit to end-users of portability of data while providing yet another path to shortening the software development cycle for programmers. Carolyn stressed the importance of **ALL** developers worldwide registering their file format in confidence with her at Commodore, Westchester, to avoid future problems.

By now it was apparent that those developers who were new to the A1000 were suffering from a large degree of cerebral paralysis such was the pace and contents of the lectures so far. At this point the effervescent Jim Mackraz of Commodore-Amiga, Los Gatos, took to the stage amid loud cheers from those who have observed his previous performances. He took the European Software Developers Conference in Eastbourne by storm and one year on demonstrated he had not lost any of his natural ability to enliven tedious topics with wisecracks and ad-libs all delivered at frantic pace. If Jim was not involved with computers then he would find ready employment as a stand-up comic. The new 1.2 version of Workbench was the first topic that Jim dealt with. Whereas Tim King had concentrated on AmigaDOS aspects of V1.2, Jim covered

the Intuition elements of V1.2. There is a new manual for Intuition which Jim stated he had finished writing although he was unable to give an answer as to availability — let us hope that the bureaucratic processes at Commodore do not take too long over the issues of this important document.

Bob Mical the system designer of Intuition was the next to take the stage. Although no longer with Commodore-Amiga Bob is reportedly working on an AMIGA application for eventual release through Electronic Arts in the first quarter of 1987. Unlike Jim Mackraz whose speaking style seems modelled on that of a New Yorker, Bob Mical together with Dale Luck epitomise the *laid back* Californian school of lecturing with many stories and diversions into the realms of humerous events and happenings during the development of the A1000. He began with a discussion of the design philosophy behind Intuition and used a comparison of requestors used by GRAPHICRAFT and Aegis IMAGES as a demonstration of the improvements made in design styles between an early software piece and a later one.

The final lecture of the first day was taken by Bart Whitebook of Commodore-Amiga and concerned itself with 3-dimensional graphics. Bart started off with further amplification of the new graphics functions added to V1.2 and underlined the importance of the GFxBase definitions for PAL or NTSC displays. He also made the very pertinent point of avoiding the practice of stashing away several k's of memory for use as an emergency *programmer's ripcord*, a symptom of a poor standard of programming since V1.2 has sufficient robustness to avoid the need for this. A suggestion was made of 32-bit colour registers in future AMIGA products and together with the importance of the **LastChanceMemory()** function — some hints of a 68020 machines perhaps? The highlight of Bart's lecture was the demonstration of 3-D graphic images using the A1000. This was followed with a very detailed discussion of the mathematics behind 3-D graphics with matrix transformations and transformed polygons being the main topics.

The first lecture of the second day was taken by Neil Katin of Commodore-Amiga on Expansion Software. Some extremely interesting topics were discussed although Neil provided confirmation that V1.2 would not support a system boot-up from any drive other than df0: since many USA developers had been hoping that this would be possible from a DMA hard disk. The reason why this was not implemented in V1.2 was due to the simple fact that Commodore-Amiga did not possess a DMA hard disk at the time of writing V1.2 itself! Developers who were implementing a time-of-day clock were strongly advised to contact Commodore-Amiga as the memory space allocated in the system memory map for this was left open. Questions were raised over difficulties over the expansion bus interrupts and it was indicated that under V1.2 the function **AddIntServer()** must be used. This unfortunately yields a 63 microsecond overhead although it does overcome the problem of system crashes and lock-ups from interrupt problems originating on the system expansion bus.

One of the most novel topics to come out of the Monterey conference occurred at this point when Neil revealed the possibility of moving **ExecBase** out of *chip memory* and into an area of the system memory map previously thought to be inaccessible. The benefit here being an increase in the amount of available RAM to the user. For example a 512K A1000 would show about 650-700k free even with Workbench enabled for the user.

Hardware served as the core of Glenn's lecture and one of the major debates at the present time revolves around *interlace* mode flicker. Suggestions were made about overcoming this by adjusting the contrast and brightness controls, using long-persistence monitors or simply avoiding viewing conditions under fluorescent lighting. Since the *interlace* refresh rate is a direct function of the power supply frequency, the problem is made worse in countries such as the UK with a 50Hz supply where the screen refresh rate is only 25Hz with *interlace* mode selected as opposed to 30Hz in the USA and Canada. The lecture then moved on to connecting a RGB(I) monitor to the A1000 as the documentation supplied by Commodore seemed unclear on the connector layouts. Another piece of totally new information then emerged in the next topic to be discussed, namely the RS232 Serial Port. This port can run at speeds up to 3 system colour clocks which is the equivalent of 1.0MHz. No, this is not a misprint — I did say One Megahertz! The A1000 Serial Port also contains support for a **MIDI** interface and the AUDOUT/AUDIN pins are designed for this purpose being rated at 1 volt analogue.

Mike Boom, a freelance author and musician was our next speaker with the latter occupation giving the clue to the contents of his lecture. This was concerned with the sound and musical capabilities of the A1000 and Mike addressed the strengths and weaknesses of the machine. A very interesting and detailed discussion of the **MIDI** interface, its history, limitations and protocols followed. From a musician's point of view Mike felt the best application for the A1000 was as a precussive instrument, primarily a drum machine and he ably demonstrated this with some powerful accompaniment to some synthesisers. It was clear that there are many opportunities for software developers in this largely unexploited area.

Gail Wellington, already a legend in the UK provided the conference with the next topic named *"Developing products for Europe"* in her inimitable and confident style. She provided a large number of charts of data stressing the fact to the audience that Europe and the rest of the world **was** important to Commodore and would not nor should not be ignored. Gail is now the newly appointed International Software Manager of Commodore International, the holding company for all Commodore companies world-wide — an appointment for which she has worked long and hard.

Video Processing formed the following topic and this was addressed by Tim Jenison of Newtek Inc. He started with *hold and modify* — this is the display mode that allows 4,096 colours onscreen simultaneously — a feat that no other publically available 68000-based personal computer is capable of. Tim discussed exactly what *HAM* is and what it is best used for. This covered areas such as photographic quality images, video production, graphic arts and advertising. There was also some discussion of the limitations of *HAM* in terms of the horizontal resolution and processing time for pixel manipulation although it was made clear that compared to a system with 12 bit-planes it was still extremely good.

The final day was taken up with the product announcement of the A2500, the details of which are covered elsewhere in this issue. A software developers fair also took place with many conference attendees showing off their latest developments. The afternoon session was taken up with workshops covering all aspects of the A1000 and were hosted by the various Commodore-Amiga specialists. In the evening Commodore held an awards banquet for USA software with various comedy interludes. Probably the most hilarious were the series of homemade videos shot by the Commodore-Amiga crew in and around Los Gatos. These took the form of several mythical television advertisements for the AMIGA computer and confirmed my opinion that most of them are talented comedy actors. Thus ended a very busy, but enjoyable five days in Monterey, California and I came away with plenty to write about in future editions for our readers. All I have to worry about now is how to be nice to the publisher so I can go to the 1987 conference!

B.D.

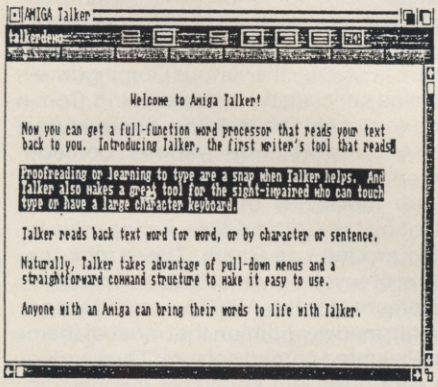
Talking W/P

As the AMIGA says, when you load up the disk, "Welcome to Talker..." Not quite, this is Hal speaking but very friendly indeed...

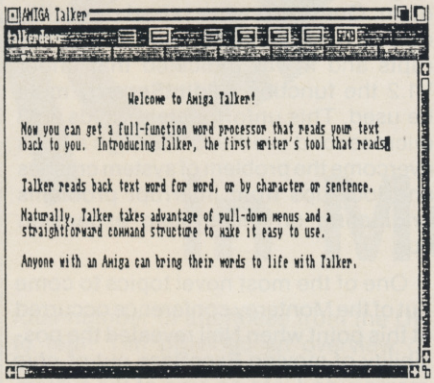
So you thought you knew what you knew what word processing was, eh? But then, probably you thought that you knew what computing was, before the AMIGA came along. Since computers came available to a wider than purely technical public, Word Processing has been growing in popularity. Dedicated word-processing computers like the Wang were the machines that made computers familiar both on office desks and to the average secretary. Amstrad's first success in computers came from their W/P machine. But why anyone would want to buy a dedicated word processor now, except by persuasion from a big adversting compaign, I can't imagine. Today the word processing packages that run on machines like the PC, AMIGA or even the 128 are for most purposes equally as useful and in addition you get all the facilities of a computer too.

As yet not many W/P packages have emerged for the AMIGA — which is a pity, for with the immense potential of its multitasking facilities it could prove a powerful tool for W/P. Of course, with Sidecar or the new PC compatible AMIGA 2000, all the wide variety of PC packages can be used. But they, in most cases, could hardly make full use of what the AMIGA can really do, designed as they are for the less imaginative scope of the MS-Dos environment

Textcraft and Scribble were the first to arrive on the AMIGA. Neither thought useful as their reviews in Commodore Business and AMIGA User demonstrated



— were other than average. Scribble has just brought out an updated version which will be reviewed in our next issue. ProWrite is about to be launched in the U.S. and is reputedly going to make a substantial impact. Viza, well-known for their high quality 64 and 128 wordprocessors are working on their long waited



W/P for the AMIGA but as a knowledgable commentator noted recently, "You'd better not hold your breath on that one. They've been promising it for over a year!"

So, in view of this unexciting situation, it is very pleasant to receive a word processing package that is an AMIGA W/P — created using the special characteristics that make this computer... well, special. We might, echoing its own opening phrase, offer a "Welcome to Talker".

It is an attractively and conveniently designed packaged, ideal for filing on a shelf. It has the neat design idea of making the manual a part of the packaging so you never will find, irritatingly, you have one, the package or the disk, without the other — the manual. The manual itself is brief — about 20 pages — easy to read and simple to understand. It is not full of technical jargon and is clearly intended for people who might have had no contact at all with word processing before. As one of the possibilities of TALKER is that it might be used by those who suffer from difficulties of sight, it was a good idea to print the manual with large clear type.

Starting up TALKER is simplicity itself. There are no complicated codes or routines you have to learn, just put in the disk and away you go.

It has all the usual functions that you might need from a W/P package: margin settings, adjustable tab stops, paragraph indents. Titling, line spacing, text alignment and other functions are carried out through the use of icons. And it effectively uses the pull-down menu system to create, store or retrieve documents and for other options. There is also an "About Talker" option that will give some brief details about TALKER and its creators. (Note to TALKER's creators: I was taught "i before e except after c". So the word is "Brief" not "Breif"! Maybe they could add a spell-checker next time — and use it themselves!)

The style menu lets you use plain, **bold**, *italic* and/or underlines and the edit option lets you move text around, copy it to the clipboard and paste it into your document.

Yes, yes, I hear you cry, that's word a processing package, what's so special — AMIGA special — about that?

TALKER is special in that it will tell you what you've done (No, it will not I'm glad to say, comment on you writing style...). With another option — as simple as any of the others, it will speak by single character, speak by word, or speak by sentence — or if you choose, it will remain absolutely—and in a noisy and crowded office perhaps mercifully — mute. It has sliding gadgets which let you control the voice variables — speed, pitch, rate, volume and sex. You can have a male, female or even computer style voice, if you wish. The voices are not the perfect, human tones that the AMIGA can manage in digitised speech but they are, according to your taste, adjustable to reasonably accurate, slightly metallic imitations of the male or female voice. There are people, I have met, who sound a lot worse.

Now, it might be asked, why should anyone need a W/P that tells you what you have just written or your last few words you can look up and see. Well, if you are sight impaired, there is no doubt at all that it is an absolute delight to be able to work alone on a computer to type letters and so on — and hear your words, for dyslexics it can also obviously be of benefit. But also if you are not a touch typist, as most of us are not and you follow the "hunt and peck" style. TALKER can let you hear your results — instead of having to look up every few moments at the type on paper or screen. It will tell you what you type, letter by letter, word by word or sentence by sentence; which can be a great help, too, if you are just learning to type.

There is one more factor in which TALKER can be useful. This is involved with any form of creative writing — and virtually all writing has some element of creativity in it. It is style, individual but acceptable, that is what makes something easy, agreeable, entertaining, to read — even technical material. That style is what gives the "sound", agreeable or otherwise that you hear in your mind when you read. Perhaps the best way to achieve pleasant sounding text is to read it aloud. TALKER will do that for you. It will give you the chance to hear what you have written and change it if it doesn't "sound" right, which can be very helpful.

If this review strikes you in addition to being informative — as I hope it does, pleasantly conversational in tone, it may be partly due to the fact that I had TALKER read it to me first. This is Commodore Business and AMIGA User — and TALKER — signing off. Goodbye.

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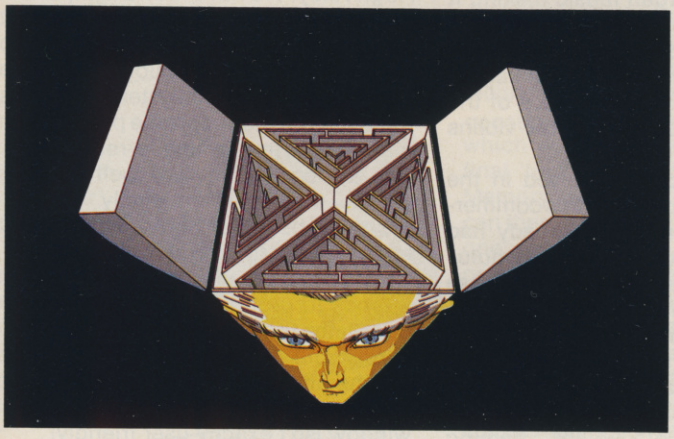

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ADMATICS

— The AMIGA in advertising by Stephen Rodgers

Television commercials cost an awful lot of money. Because of this expense, if you happen to be in the business of thinking up those commercials it can be said that you are only as good as your last idea. So, before the advertising agencies spend the possible six figure sum required for a finished TV advert, they like to be pretty sure that it will communicate effectively with the target audience. This is done by exposing a model or prototype to members of the public and researching the effects, the extent of communication and the accuracy of recall.

The stimulus materials used take many forms, depending on the context — and the budget. Sometimes a "narrative tape" an audio tape with sound effects describes the commercial. Sometimes a storyboard, a series of pictures (perhaps thirty) are drawn to represent the people and scenes. Sometimes these pictures are filmed and edited with a soundtrack to produce an 'animatic' or 'photomatic'. Theoretically a good animatic is the best medium as it is presented on a television screen and the audience has a better chance of relating to it as a 'trial' commercial. In practice many animatics are still so far from the finished article that the public may have trouble making the necessary imaginative leap.

This is where the Amiga fits in. Often an animatic will only have fifteen or twenty pictures across which, at best, jerky, unco-ordinated type animation occurs. Anybody aware of the potential of the Amiga can see that it can do better than that with one hand tied behind its back — and run a spreadsheet at the same time! Actually that is not quite true. In fact it calls for huge amounts of memory and the machine has to work fairly hard to throw all those pictures at the screen, but with excellent custom-software by Ariadne Software Ltd and some serious persistence by yours truly we have now been producing Admatics (as we call them) since August 1986.

A good example of how the Amiga scores over old fashioned animatics is supplied by our experience with a TV commercial for Butlins Holiday World, first broadcast on Boxing Day 1986. Those who have seen it will (of course) remember that it features scenes of a deserted, windy, decrepid, military looking, 50's style holiday camp. It is filmed in grey, green and white and a Beverly Sisters song (evidently played on a wind-up gramophone 1950's style through a Tannoy), completes the atmosphere.

Suddenly the camp begins to explode! We see a canteen erupt, a kitchen is destroyed, huts fragment and the horn loudspeakers of the Tannoy burst apart. All of this happens in eerie slow motion with fairground organ music making it seem jovial and fun. As the dust settles, the view clears and we see a sunrise over a cliff where a little girl hoists a flag on which is the logo and a picture of the brochure, the sounds are now violins and al is roses.

The Amiga became involved in the story of the development of this commercial after the agency had already had one stab at producing some stimulus material and researching it. In this case the stimulus material was as follows. A sort of video narrative tape had been produced — a man sat on a sofa and told the audience to imagine the commercial. When the explosions started we saw library footage of violent, flaming explosions and then cut back to him on the sofa. The young families to whom this had been shown had jumped when the explosions happened, one young mother even shouted — "Oh! There aren't people in there, are there?" So psychologically this stimulus had transmitted two ideas:—

i) A frightening, unpredictable, association between people and explosions.
ii) That holiday camps used to be really awful places, but now someone has blown them all to bits, so they are all right now.

Clearly these were not the desired communications and it was largely the stimulus material that was at fault.

The director of the commercial pointed out that she had intended the explosions to be gentle, non-threatening affairs, that it was intended to suggest change but of the non-violent kind. But how can you suggest that without blowing a camp up and replaying it in slow motion? (In general you can only explode things once).

"Simple!" we said and showed her some of our other work, she liked it and gave us a script, some photographs of the doomed camp and eight days to finish it.

The first stage was to digitise the photos and send them off to an artist — in this case the redoubtable and prolific Hugh Riley. We have found it important to use digitising wherever possible as it adds depths of realism that are hard to achieve by drawing alone. We use Digiview for this; the system that takes three filtered monochrome pictures and mixes them to produce lo-res pictures. The system works very well with the caveat that it is relatively easy to produce beautiful 'arty' effects, but rather harder to reproduce exact representations. A rather irritating fault is that it tends to produce two blacks when it calculates the colour palette, a waste of colour, but more seriously the colours are the ones that Aegis Images uses in requestors — black writing on a black window isn't exactly user friendly!

Hugh then used Images and Dpaint to edit these images, sharpen them up and create related ones. Considerable use of 'magnify', 'frame' and 'airbrush' produced the pictures that supply the explosion sequence, and a smooth panning shot can be made by using the same picture many times but altering the perspective on each. This is where the strength of computer drawn images becomes apparent — a conventional animation artist has to redraw each picture on a blank piece of paper, a computer artist can generate many different pictures from the same start point, and then choose the ones he or

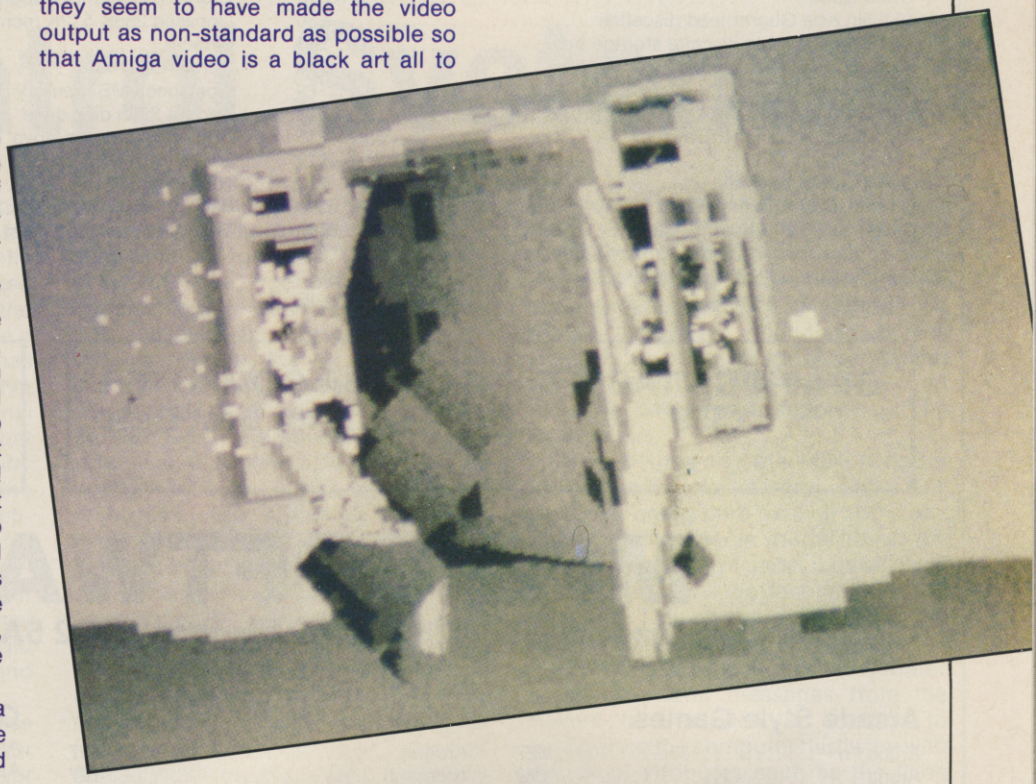
she really prefers. Another advantage of a computer based system is if, for example, a hairstyle was wrong in an animatic the producers would find it very expensive to change — a Admatic could have the changes effected and re-recorded in a matter of hours.

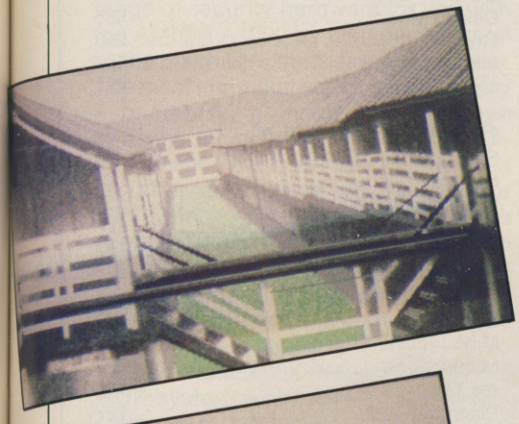
In order to give the artists as long as possible to work on the Admatic, and to save the half-day normally lost when using Red Star, we use modems to transmit the finished material. The modems also give us the advantage of being able to see how work is progressing — again this is nearly impossible with conventional animatics.

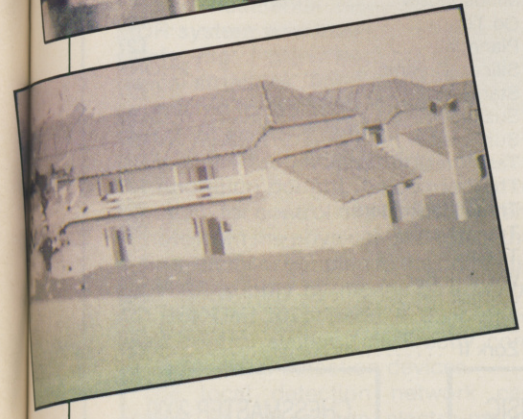
The models we use are Pace Series IV modems. They are expensive and have many features that we are not yet using, but we need them because they can handle 2400/2400 baud. This is essential as a finished Admatic runs in about two megabytes, even then it takes at least two hours to transmit the whole thing! We find that the phone system is not yet up to this data rate during day time, so we have to do it in the depth of night. I haven't found a way of automating this process from software as yet, so the artist and I have to man our terminals, typing the correct filenames every five or ten minutes.

Amiga artists are rare enough, Amiga artists equipped with extra memory are rarer still, so the Butlins Admatic arrived in nine sections which I had to stitch together before presenting myself and the machine at the video edit suite.

Commodore have produced the most affordable graphics computer yet, but they seem to have made the video output as non-standard as possible so that Amiga video is a black art all to itself. Getting a presentable picture into a Hi-Band U-Matic edit suite is extremely difficult, but it is enough to say 'we have the technology' and from here on we are in the hands of conventional video technology. This rankles a bit and I am constantly trying to think of ways in which we can leave even more of the final 'look' in the hands of the artist. Memory expansion helps as he or she can then see the whole of the Admatic in one go, I am also very interested in producing soundtracks on the Amiga, and having the machine play sounds and pictures simultaneously.







The memory expansion we use is the Comspec 2MByte device, it works fine and the latest version of Kickstart automatically senses its presence and makes it available to the system. However, certain items of software are not quite as clever, and I have found the following problems:—

i) Aegis Animator is not aware of the memory. This is frustrating as this particular program is always whinging about 'not enough memory'.
ii) DPaint doesn't display the slider knobs on the palette adjuster if it is loaded into an expanded system.
iii) Textcraft shows no pointers at all if loaded when the machine is enlarged.
iv) Aegis Images will not load pictures from ram disk.

These last two points are connected and are to do with the types of data chunks that C compilers create when outputting compiled programs. The pointers are presumably sprite or bob (blitter object) images that are getting 'lost' in the higher addresses. (Remember that the Amiga has only 515K of chip memory).

The output from the edit suite was a video cassette which was then placed in the hands of the researchers. The client was very pleased with our finished product, not to say amazed at the power of this new method. The Admatic researched better, as the explosions were much less frightening, and the production team were given valuable clues and insight as how best to film the obliteration of a holiday camp.

See your there!

Potential artists and clients should contact:—
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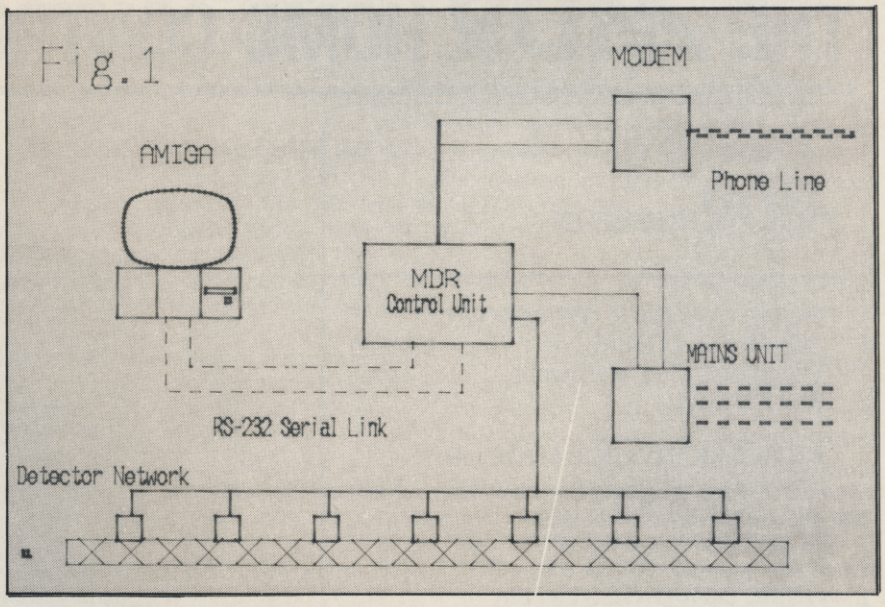
MDR Home Control System

Non-domestic premises are something else where contents values run into thousands and more importantly the after effects of the disruption caused to the business can easily out-run the actual loss. Even in a situation where a break-in has occurred and nothing has been taken it is worth remembering that industrial espionage is not a criminal offence under UK law. You may feel that because your business is not an *industry* as such, has nothing to do with the armed services or you have no competitors in the immediate vicinity that such a thought is frivolous. Put another way — would you like to have some stranger reading through all your letters, plans, invoices, bank statements? You would be astonished at the level of prying and spying that goes on these days.

Deterrence is the answer to these antisocial persons and using your AMIGA which unlike a guard-dog, never goes to sleep or needs feeding is now possible using equipment from a UK company. MDR Interfaces Ltd. provide a range of security hardware for use with the AMIGA A1000 by taking advantage of the machine's multi-tasking abilities. The most immediate advantage of using a multi-tasking machine is that the security surveillance regime is **continuous** since the computer can be used for other tasks. Other possible uses for this system lie in the field of process control. These do not necessarily mean control over manufacturing processes — for example, collection of sales or statistical data from personnel remote from the main site.

The fundamental design basis of the MDR system was **security, quality** and **safety.** Fig. 1 provides an outline of a typical structure. The AMIGA A1000 is connected to the MDR Control Unit by means of an RS-232 link. The Control Unit can then (depending on the configuration bought) be connected to a modem for control of a further system remote from the physical location of the main system, or coupled to the domestic 240V AC supply by means of a *Mains Modem Unit* to provide a distributed local control system, or directly connected to local detection devices.

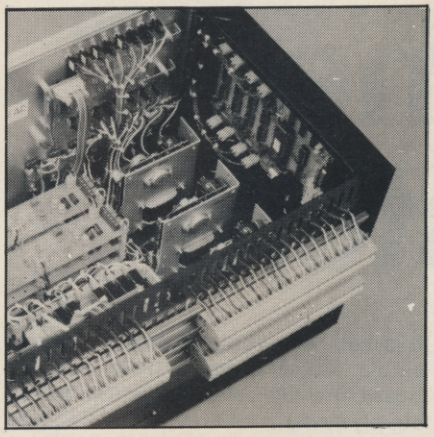
The local detection network can consist of low-voltage electro-mechanical devices such as relays, micro-switches, pressure pads, solenoids — in effect any device that can produce a change in voltage state. These devices can be part of a larger system such as a burglar alarm, central heating system, water level control, lighting, door or window controls, the list is inexhaustible. Control through the domestic power system *wiring* using the *Mains Modem Units* is a simpler and secure version since it avoids the creation of a wiring network by using existing resources. The most sophisticated aspects of the MDR Control System are revealed by using modems. These provide a means of monitoring and control over further MDR systems which can be situated thousands of miles away. Naturally this element of the system is dependent on the quality and availability of the telephone lines, however with the increasing sophistication of auto-dial/auto-answer modems with automatic transmission rate sensing there seem to be few restrictions.



The MDR Control Unit uses an 8749 cpu, an 8-bit processor which is well known in industrial control applications with the benefit of being a tried and trusted component. The interface within the *Mains Modem Unit* to the domestic 240V AC supply is done through optical-isolators for safety to the user and the hardware. The only limitation on using this method control is the restriction to a single phase supply. It is not yet possible to utilise UK industrial power supply systems for distribution because of certain component limitations on 440V AC. However, when this becomes possible the potential for spreading the control network over three phases of an industrial 440V power supply could be enormous.

The software for the MDR Control Unit relies on Intuition and is very well designed being both explicit and clear. The *control panel* is modelled on the *Preferences* control panel thus all users of the A1000 will be familiar with the structure. This *control panel* allows the setting of baud rate transmission if using a modem, selection of the Narrator device for aural messages from the system to the user, in addition to configuring the computer hardware with the usual attributes such as the filing system structure. A very strong feature of this software is error-recovery and error-detection of transmission faults with various alarms, audible or visual being available depending on the choice of the user.

There is no doubt that this system has far-reaching potential. By employing the multi-tasking facility of the A1000 the **continuous** monitoring of devices either locally or at some distance is



made possible **without** losing the use of the computer hardware. Since the AMIGA A1000 has many unique features in terms of its graphical facilities these can be engaged with this system. For example, consider a high security facility with an electrically operated gate remote from the installation itself. A person desires entry and initiates the *attention* sequence. This could be by optical detection by triggering a light beam or by infra-red detectors scanning body heat. This action then triggers a closed-circuit camera which in turn is relayed to AMIGA A1000 which is fitted with the GENLOCK device. The screen now displays an overlay of the scene at the gate. The security controller who has been word processing then switches into SUPERBASE and compares the graphical image of the person's face from the database of the site personnel. If the security controller is satisfied then the gate can be opened, if not then the deterrence device can be employed — in this instance a life-sized cardboard cut-out of the editor of *AMIGA USER* magazine which has been cunningly concealed in the bushes springs into view — exit the terrified potential intruder!

This may sound like science fiction, but the above scenario can be readily translated into facts because both the hardware and software are available **NOW** as you read this. Not only would such an installation be considerably cheaper than any other comparable system, it would also have the benefit of releasing a major resource for additional work. Once again here is a classic demonstration of the real power of the AMIGA hardware being put to sophisticated real-world applications by creative and imaginative ideas and programming. Richard de Rivaz, Managing Director of MDR Interfaces told *AMIGA USER* that substantial sales have already been made into several industries, although naturally he was reluctant to reveal too much given the sensitivity of some of his clients — in a future issue we hope to bring you an actual application of this innovative device.

B.D.

Price: Systems starts at £375 (plus VAT)
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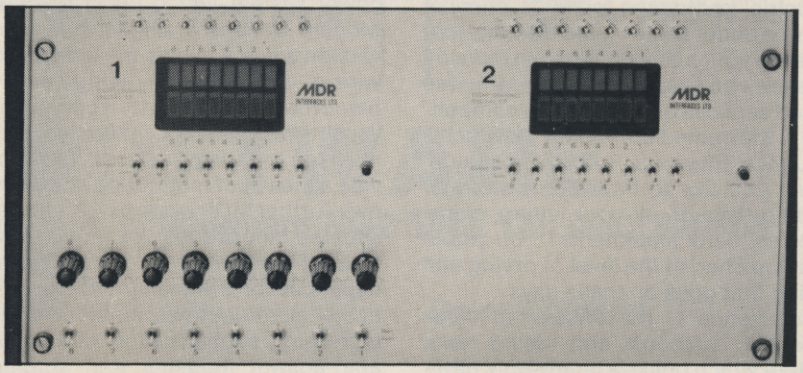
Tel: 0825 790294.



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E.A.'s DELUXEPAINT II

Electronic Arts has released Dan Silva's **DeluxePaint II** for Amiga computer systems. This improved graphics tool expands the computer generated capabilities of the award winning *DeluxePaint* which was released by the company early last year.

The enhancements in **DeluxePaint II**, added to the original program, enable graphic enthusiasts to create colorful images in far less time than if using conventional techniques. **DeluxePaint II** introduces over fifty new effects featuring the ability to create Perspective effects, Stenciling, Fixed Backgrounds, Gradient Fills and Pattern Fills.

Gordon noted that features added to **DeluxePaint II** allow artists more flexibility in creativity than ever before. Artists who would like to lock out specific portions of an image, in order to paint behind or front of it without disturbing it, can now utilize a Stencil tool. Stenciling saves the artist from having to redraw any portion of an image. For example, a snow cap can easily be placed on one mountain top without the worry of any color bleeding onto the rest of the range.

Three new types of fill tools have been introduced to **DeluxePaint II** including Gradient Fill and Pattern Fill. Gradient Fill allows an artist to fill a shape with multi-colored gradients as well with solid colors. A range of colors can now embellish a relatively plain image in a fraction of the time it would take using conventional techniques.

A Fixed Background technique allows artists the freedom to experiment as little or as much as they desire without disturbing the original image. The technique literally attaches the picture to the background, as often as needed, so that it cannot be removed.

Finally, a Perspective feature allows artists to rotate any brush in three-dimensions without the need for technical drafting tools. This new feature allows artists to create such effects as floors that recede into the background, with a simple fill command.

"Fine tuning features available in **DeluxePaint II** give artists significant tools for "finishing" their creations," explained Gordon. Anti-aliasing, a technique that smooths jagged lines, created when an object has been shrunk or rotated, has been introduced to **DeluxePaint II** along with a Smooth feature which is used to create a more subtle boundary between two contrasting colors. Finally, depending on the type of printer available, **Deluxe Paint II** will allow pictures twice the size and at least one and a half times taller than a standard 8-1/2X11 page to be produced.

Artists can mix to their own specifications any of the colors in the palette of 4,096 and control the percentages of red, green and blue as well as hue, saturation and value. A specific range of colors may also be specified to create special effects, such as the illusion of a light source shining on a sphere. Color cycling now supports four cycles, each with its own direction and speed to create such effects as falling snow and running water. To assist artists with precise image placements and drawing, the program also supplies a grid and display screen coordinate for exacting point-to-point measurements. Additionally, **DeluxePaint II** features the added ability to rotate ellipses before placement.

Electronic Arts is offering an upgrade program for owners of the original *DeluxePaint*. In the U.S. The company will send the **DeluxePaint II** disk to owners who send in the front cover of their *DeluxePaint* manual and $30.00 (plus $7.00 for shipping and handling). For an additional $20.00, Electronic Arts will provide an un-copyprotected version of the program. Users who purchased the un-copyprotected version of the original *DeluxePaint* need only supply Electronic Arts with the disk and $30.00 to receive the un-copyprotected version of **DeluxePaint II**.

Deluxe Music Construction Set

Desktop music performance and composition for $99.95

Electronic Arts has announced the release of Deluxe Music Construction Set for Amiga computer systems. Based on the award winning Macintosh program created by Geoff Brown, this Amiga version of Deluxe Music Construction Set turns the computer into a desktop-based professional music studio.

"Deluxe Music Construction Set is one of the most powerful composing tools available for both amateur and professional musicians," said Bing Gordon, Electronic Arts' Vice President of Marketing.

Deluxe Music Construction Set provides users with complete input, editing and notation tools for quick and simple composing. A Score Window, featuring a work staff, is where music is entered, edited and reviewed. Music may be entered into the program from the built-in library, or notes may be arranged on the staff by selecting them from the Note Palette or by playing them with the mouse via the program's piano keyboard.

The program includes a selection of digitized instruments from flute to electronic bass.

Once a song is completed and ready for play, Deluxe Music Construction Set provides three forms of visual feedback to the user. As the music plays, a measure counter, flashing notes representing those that are playing, and the player piano which plays along with the music can be viewed. Specific playback options include the ability to change instruments and play styles within each staff whenever desired; a complete volume range and playback speed from 1 to 240 beats per minute between and within each staff; and full 4 voice Amiga sound played through the internal speaker or a stereo, or via any one of 16 different MIDI channels when using a MIDI instrument.

Advanced features include the ability to create staccato, smooth, vibrato and many other sound effects that are likened to the use of a piano pedal or synthesizer control. The program also enables users to change such parameters as key and time signatures, staff and clefs, working space and score width. Pitch modifiers can also be applied to the score, as well as dots, triplets, quintuplets and ties. Users also have the ability to identify specific sections in a score for playback as often as desired, or repeat a passage without actually duplicating the music. Finally, with the use of compatible sequencer software (i.e. Mimetic's Pro Midi Studio™), a MIDI keyboard performance may be channelled through Deluxe Construction Set for the production of professional music notation.

Deluxe Music Construction Set is designed to work with other members of the Electronic Arts Deluxe Creativity Series. The product will read *Instant Music* files as standard music notation and is useful for creating scores with *DeluxeVideo*.

"Deluxe Music Construction Set manages for musicians what word processors have done for writers, freeing them to be more creative while boosting productivity," concluded Gordon. "With the comprehensive composition features of the program, it is an excellent software choice for both amateur and professional musicians."

Contact: Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, USA.

Company Profile Lattice Inc

A computer without software is rather like a car without fuel and it would be true to say that without the existence of Lattice Inc. the Commodore AMIGA would be in a pretty bad way. Whilst it was Metacomco Ltd. of Bristol through the former leadership of Dr. Tim King who constructed a multi-tasking operating system for the A1000, it was Lattice of Glen Ellyn, Illinois who provided a platform for programmers to access and use the hardware through their C compiler software. Many readers are familiar with the Metacomco/Tim King story, but few are aware of the contribution made by Lattice to getting the A1000 up and running through the particular efforts of Dave Schmitt, president of Lattice and John Meissen, Lattice's AMIGA specialist.

In common with many companies in the personal computer world, Lattice

Dave Schmitt, Lattice President.

shares the distinction of having started life in someone's bedroom. This occurred in 1981, perfectly timed for the start of the boom in computers where the centre of gravity for hardware and software was moving away from the centralised data-processing/computer bureau concept into the hands of the users themselves. Many of the data-processing/computer bureau establishments contained whole rafts of frustrated programmers who worked in the hen-house atmosphere and rarely saw the end results or real-world applications of their programs.

Lattice's first product, the ubiquitous C compiler was born of the need for an effective low-level programming environment by the professional programmers who were now deserting their former employers in droves. The choice of C was an astute move since it foresaw the need for portability of software when the development costs of applications would easily outpace those of purchasing a hardware system. The software developer would be able to amortise his costs over several machines since the greater the number covered, the larger his potential market for his product.

With a spirit modelled on the *Three Musketeers,* Francis Lynch the founder of Lattice spent two years working on the C compiler, latterly assisted by Dave Schmitt now company President and Steve Hersee, Vice-President of marketing. As usual, it was money and not ideas that slowed things down, and the company survived on royalty advances and sales of their *Unicalc* spreadsheet which also came into being around this time. All three have a background as mainframe/minicomputer systems programmers and this technical inclination in the company's outlook continues to this day. Dave Schmitt continues in his original capacity of manager of the technical group and Steve Hersee serves as a leading member of the ANSI C Standards Committee.

One of the proudest achievements at Lattice is their complete financial independence — they have never taken on any outside financing. This provides the company with the freedom to take the risks and reap the rewards without the tedium and delay of third-party involvement. Critics may scorn such a cavalier attitude, but Lattice can point to aggregate worldwide sales of 30,000 units of the C compiler alone — no mean feat for a product directed at a specialised market. However, this doesn't mean that Lattice has an expansion policy based on *gut-feeling*, quite the contrary since Hersee makes the point that the first 5 years have been closely controlled in terms of company growth.

Customer service figures strongly in the management philosophy and in the USA Lattice provides a newsletter produced in-house, operates a 24-hour bulletin board and has a continuous conference running on the BIX network. This is in addition to the normal technical support offered from their *Hotline*

Steve Hersee Lattice Vice President Marketing.

phone-in service. Indeed the opening paragraph to their C compiler manual for the AMIGA states *"Welcome to the Lattice family"* — a phrase which may well be greeted with cynicism from European programmers used to nil support from software houses. However, from our own contact with Lattice the common theme of *wanting* to look after the programmer-customer emerged time and time again.

We were interested to learn of their continued support (and enthusiasm!) for the AMIGA and this was reflected in the latest release of their C compiler for the A1000 (version 3.10). A review will be appearing in AMIGA User. Some other products are in the pipeline although they wouldn't make any comments at this stage of what these are. A company to look out for during 1987 because they will have some interesting products for the AMIGA programmer and maybe end-users too.

B.D.

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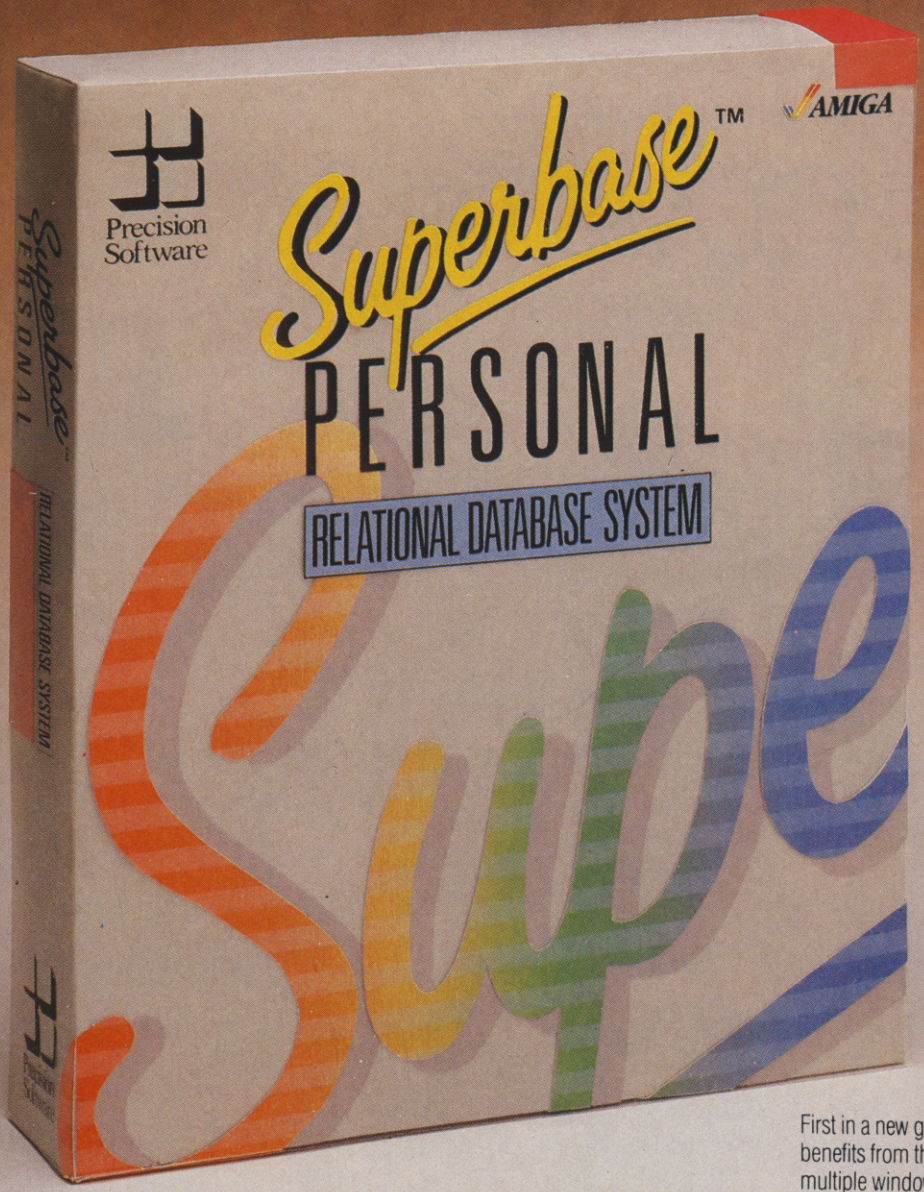

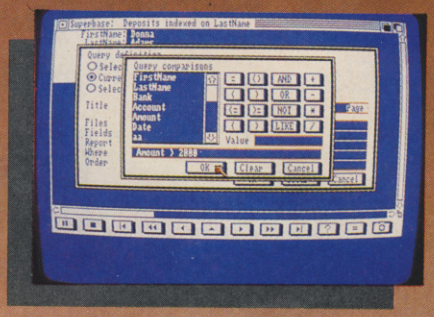

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THE WHICH COMPUTER? SHOW Stand **643**

Why Electronic Arts is Committed to the Amiga, Part II

THE CLASS OF '86

Last year, we challenged our best software artists with the audio-visual horsepower of the Amiga. They responded.

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Brian Fargo
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The best new dungeon fantasy of 1986, impressively redesigned for the Amiga. See how ugly an ogre can be.

R. J. Mical (seated)
Co-designer of the Amiga has a top-secret game in the works. Can he really make the Amiga stand on its head?

Glenn Tenney
Adventure Construction Set
Build your own adventures. Or let the computer make them. Or play the nine built in.

Larry Reed
Marble Madness
Race marbles through wildly-colored 3-D mazes. Amaze your friends.

Rick Koenig (seated)
Grand Prix
See pixels fly at 250 mph. Hear the turbos whine. Taunt tailgaters in your rear-view mirror.

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Earl Weaver Baseball
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R. D. Rosenberg
DeluxePrint
For full-color greeting cards, stationery, calendars, and more. What you see is what you print.

John MacMillan (seated)
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Desktop music publishing. From keyboard to sheet music in minutes.

Dan Silva
DeluxePaint II
A feast for the eyes. With perspective, pattern fill, stencil, anti-aliasing and much more.

Tom Casey (seated, without co-designer Mike Posehn)
DeluxeVideo
Special effects. Slide shows. Animatics. Rock videos. The sky's the limit.

Bob Campbell
Instant Music
Jam with digitized instruments. All music, no mistakes.

Mike Wallace
Return to Atlantis
A 3-D undersea "interactive movie." Water-tight animation.

Anne Westfall, Jon Freeman
Archon II: Adept
An action-strategy classic. With panning hi-fi stereo.

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OCTOBER 1986

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Lattice C Version 3.10

Few professional programmers involved with the AMIGA need any introduction to the **C** compiler from Lattice Inc. Not only was it the first low-level compiler to be provided for software developers but this particular **C** compiler despite claims from its competitors, remain the only one that provides *full access* to the functions and features of the machine. This is reflected in the popularity of the product among programmers where Lattice **C** continues to considerably out-sell the competition. Couple this with competitive pricing and official support from Commodore-Amiga and it is easy to see why. The previous version (v3.03) has now been replaced by version 3.10 with immediate availability. However, unlike most version updates which are merely a debug of the previous issue, this product update contains several new and valuable features.

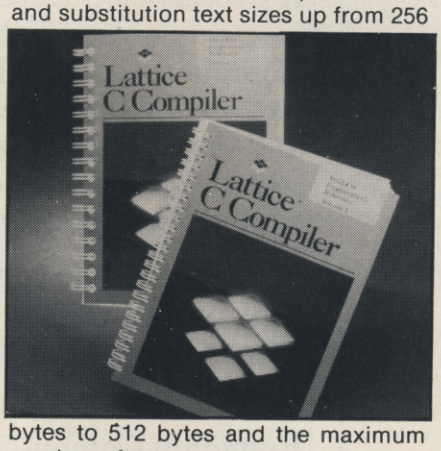
The first things that the new purchaser notices are the inclusion of two disks rather than the previous single one and a manual vastly increased in volume and scope. The manual has been completely rewritten and updated in the light of operating experience and product enhancements and now runs to more than 400 pages. The first disk is a bootable system disk containing the executable programs. The second disk contains the Lattice and Amiga header files and libraries, source files for some of the routines in the Lattice run-time support library together with some example programs written in **C**.

The new library now contains a further 100 functions than the previous version and new addressing modes, along with increased modularity of the libraries which means a reduction of load module sizes in the order of 20%. The maths functions have been completely overhauled and feature very much faster floating-point and integer calculations, improvements to the IEEE floating-point routines and the long awaited direct support to the Motorola FFP libraries. Support is also extended the multi-tasking facilities.

One of the strongest criticism's made by software developers was the length of time the Metacomco Linker took to execute. Unfortunately some of the *fallout* from this fell onto the **C** compiler despite reassurances from Lattice that the fault lay with the linker. Lattice decided to break away from the notorious **ALINK** with its object file format and use one developed elsewhere. This linker is named **BLINK** (presumably the next version will be called *PRISON* rather than *CLINK!*) and was produced by the Software Distillery Inc, although it is marketed and fully supported by Lattice. **BLINK** addresses the problems of linker speed and is a worthwhile improvement on its predecessor.

In addition to the new linker the other noticeable inclusion is a 68000 macro assembler. This, together with single command line execution of compiler, librarian and linker make up a very usable package. Thus purchasers now have a complete development system with this product and can avoid the hassle of dealing with several different suppliers — with each blaming the other for the failure of the programmers code to compile! So what are the differences?

The standard header files have been modified to include argument types in their external declarations. A completely new header file *STDLIB.H* contains declarations for functions not covered in the other standard header files. The compiler now consults the AmigaDOS logical name *INCLUDE:* to locate files mentioned on *#include* lines. A large number of new options have been added to the compiler. For example, the inclusion of a *—e* option which recognises extended characters sets — useful in foreign language applications such as Japanese. Another option allows the disabling of error messages for structure and union tags that are being used without being defined, an excellent time saving during the program development phase. Several of the compile-time limits have been increased, input line size and substitution text sizes up from 256



bytes to 512 bytes and the maximum number of macro arguments have increased from 8 to a maximum of 16 arguments.

Under AmigaDOS it is possible to specify which type of memory the program segments (*hunks*) were to be loaded into i.e. *fast* or *chip* memory. This version of Lattice now supports this making re-compilation of source code generated under previous regimes of the system software simpler. Loading times of *hunks* can be considerably reduced by the facility to merge similarly named *hunks* although this can be at the expense of efficient memory utilisation. The availability of symbolic debugging tools such as METASCOPE is taken into account with another compiler option which allows the inclusion of symbol data.

I mentioned earlier the support lent to the Motorola *Fast Floating point* maths routines although it is still not possible to merge code containing this with the IEEE floating point format — no doubt a large sum of money awaits the programmer who can implement this! Another option allows the compiler to generate data references as offsets from a base address register, a function more commonly known as *base relative addressing*. However, there are potential problems in using this option with such code that employs the **EXEC** *AddTask* function or is intended to serve as an interrupt-handler. This revolves around the use of the **A6** register which this option uses as data section base address register. Unfortunately, those tasks created with *AddTask* can place random values in register **A6**, although there is an option flag on the second pass of the compiler to solve this problem. At least can't say you were not warned!

The changes in the libraries has been extensive and many of the low-level routines have been improved. For example, the *ftell* function could not obtain the file position in translated mode and then reposition to the same spot using *fseek*. This problem has now been overcome by means of some changes in the *stdio.h* eader file. The *open* function now returns an AmigaDOS *file handle* rather than the UFB array index. Some of the new functions provide a very easy means for the programmer to access the AmigaDOS facilities — *getfa* obtains the file attributes, *getft* obtains the date and time information while *getcd* and *getcwd* get the current directory path.

Portability of code is a strong feature of the **C** language and this version of the compiler provides no less than 21 functions to provide closer simulation to the **UNIX** and **XENIX** environments.

One new feature which I found par-

CCI AMIGA USE

ticularly valuable was the automatic enablement of the *CTRL-C* keys. This now means that the usual situation of a program that appears to have compiled satisfactorily and runs seemingly OK until the user wants to end it and nothing happens — the program has taken over the machine. This is very, very frustrating since it means a time-wasting reboot in order to regain control. Modification of *_main.c* is needed to delete this feature which seems an eminently sensible approach to a repetitive and annoying problem.

Another peculiarity well known to regular AMIGA programmers is the *stack-overflow* syndrome. it is not possible to increase the size of the stack once the application is running, thus the importance of choosing the correct allocation from the system heap. Lattice have attempted to overcome this problem by using elements of Intuition to warn the programmer/user that a stack overflow problem has occurred. The reason why Intuition was selected for this purpose is related to the task in hand, for example some task will not use a standard AmigaDOS console window attached to them, whereas an Intuition requestor will always appear on the display. By soliciting a response from the user this allows incorporation of routines to either reset the stack if possible, or exit cleanly by closing files and deallocating memory. This assumes of course, that the programmer works to a high standard and allows for such events — unfortunately there seem to be a lot of sloppy programmers about these days.

A compiler purchaser is looking at four components — does it provide all of the facilities I am going to need, does it allow full access to the machine, is it supported by the supplier and is it competitive in terms of cost? This version of Lattice **C** directly addresses these four points and scores heavily on each. Existing users can upgrade to this version without paying the full retail price — the cost varies according to the country. Add to this the fact that Lattice have broken free of the reliance on the unloved AMIGA standard linker ALINK and object file format while retaining compatability with previous software demonstrates a company willing to listen to and act on behalf of their existing customer base. A polished, professional product which continues to retain its title as the definitive **C** compiler for the Commodore AMIGA.

Price: £345 (plus V.A.T.). **B.D.**

Supplier: Lattice Inc. PO Box 3072 GLEN ELLYN Illinois IL 60138 USA Tel: 312 858 2190
UK Distributor: Roundhill Computer Systems Ltd. P.O. Box 14 MARLBOROUGH Wilts. SN8 1LR. Tel: 0672 54675.

C Compilers,
Development Tools

Lattice

New Lattice Amiga C Compiler

A major new release of Lattice C for the Amiga is now available from Roundhill. Version 3.1 includes an enhanced C compiler, a full macro assembler, and a new, faster and more efficient linker. The library has over 255 functions (over 100 more than standard Amiga C), with many more functions written in assembler for efficiency, faster IEEE floating point routines, support for Amiga FFP floating point, and multitasking support via *fork* and *wait*.

The compiler is delivered as a two-disk package with a bootable system disk to simplify installation. A single command line can be used to execute the compiler, linker and librarian (with AmigaDOS wildcard characters).

New compiler features include direct support of memory type specification, custom segment names, and new addressing modes that can help reduce load module size by more than 20%. The linker will support intermixed base-relative and pc-relative addressing modes.

A Professional Developer's Package is also available, which includes the new Compiler, Lattice's LMK *make* utility, Lattice Text Utilities and Screen Editor, and the Metascope symbolic debugger from Metadigm. Metascope is also available separately.

We can upgrade your existing registered copy of Lattice C to the new version. Please call for full information.

Roundhill Computer Systems Limited
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(0672) 54675

Amiga DTP

At last the Amiga can begin to compete in the newest of all major computer applications; desktop publishing, where everyone can be a do-it-yourself press tycoon.

PageSetter, the first DTP package for the Amiga, has just reached Britain from Gold Disk Inc. of Canada. It is not yet up with the pacesetters, PageMaker and ReadySetGo 3, for the Macintosh, the dominant DTP computer. But it's a lot cheaper and has great potential. With a little more polish, it could do for the Amiga what DTP programs have already done for the Mac — and make the micro an essential tool in businesses big and small.

Desktop publishing is one of those odd, rather meaningless bits of computer jargon that we all have to live with. Who wants to publish desktops? If the name is silly, the reality is serious. DTP is not just the first new application for years to join computing's Big Three of Wordprocessing, Database Management and Spreadsheets.

It's more the fourth horseman of the technological apocalypse, something that could change the way we live and work — just as the invention of movable type four hundred years ago changed the world, ushering in the industrial revolution by creating mass production.

As the '60s guru Marshall McLuhan wrote in *Understanding Media* "Typography created a medium in which it was possible to speak out loud and bold to the world itself. Boldness of type created boldness of expression."

DTP is giving back to the individual the sort of total control over the production of printed matter that no one has had since scribes gave up producing hand-lettered manuscripts in the Middle Ages. DTP provides access to all aspects of printing and publishing, from creating the text — whether it's a poem, a company report, a parish mag, or a handbill stuffed through neighbourhood letterboxes — to designing its appearance on the page and printing it.

At £150 PageSetter is a bargain. (PageMaker, the leading Mac program, costs £450, and programs just appearing for the graphically limited IBM PC are priced at around £900). It's the forerunner of at least half-a-dozen other Amiga DTP programs which are under development.

The first British program is likely to come this summer from Viza Software, a company long associated with Commodore computing, when it has finished VizaWrite Amiga, its word processor should have been ready last October.

That's taking longer than expected because its programmers discovered that such refinements as flashing cursors to mark your position in the text are difficult to implement on a multitasking computer. VizaWrite allows the use of the various fonts supplied with the Amiga and the incorporation of graphics created with such programs as Electronic Arts' DeLuxe Paint and Aegis' Images.

A rival, just out in the States, is ProWrite (New Horizons, $124.95), a word processor that allows you to use different fonts, coloured text and IFF colour graphics.

One of the encouraging aspects of the development of the Amiga is the way in which software houses have agreed on a standard IFF method of storing graphics, so that pictures created with one program can be loaded into another. It's how computers should be, but so rarely are.

PageSetter is probably the friendliest of all DTP packages, taking advantage of the Amiga's Intuition interface of mouse, icons and pull-down menus to create a program which can be used almost immediately, without reference to the manual. Which is just as well, because the manual itself is dire. It lacks an index, doesn't even mention all the facilities available and gives a passing reference (in brackets) to some of the best features.

PageSetter comes on a single unprotected disk, which also contains two utility programs — one prints documents without loading PageSetter itself and so saves on memory. The other converts finished pages into IFF format so that they can be loaded into other graphics programs.

The entire program, which switches between three screens and includes a word processor and a simple graphics editor, is held in memory. This makes operations extremely fast, but means that there's not much memory left on a standard 512K machine. There's just room to create one or two pages at a time, although the program itself will let you work on up to 99.

One disappointment is that the program is monochrome, making no use of the Amiga's 4096 colours. It is compatible with any printer included in the Amiga's Preferences and Gold Disk recommend an Epson or compatible dot-matrix printer.

A page takes around six minutes to print so you'll need to use a photocopier to produce documents in large numbers. PageSetter doesn't yet support PostScript, the language used to drive most laser printers, which rules it out for high quality professional use.

PageSetter's strength is not merely that it is easy to use. Gold Disk's designers and programmers — Kailash Ambwani, Arno Krautter, Paul Chafe and Eric Weigel — have adopted the best solutions to the difficulties of desktop publishing.

The first is how to cope on a small screen with designing a page that can be any size from 2 x 1 inches to 8.5 x 14 inches. PageSetter does it with three different levels of magnification. The first shows the whole page in miniature, occupying a quarter of the screen. The rest of the space is taken up by a blank "art board" with a dustbin at the bottom and a icon-driven "toolkit" menu down the right-hand side.

At this size, you can create the basic layout for your page, deciding on the placing of margins and the number and size of the columns of text and illustrations. If things don't work as you'd hoped, you can drag elements of your layout off the page and store them on the art-board to retrieve later — or dump them in the dustbin.

The second degree of magnification shows most of the page at the size it will be printed. At this level, you can read headings, but not the body of the text, and see a rough rendering of the illustrations. You can scroll the page in any direction.

At the third level of magnification, a pixel on the screen represents a pixel on a printer so that what you see (an eighth of a page at a time) is what you get. Switching from one level to another is accomplished by clicking the lefthand mouse button on the toolkit icon of a magnifying glass and takes a second or two while the screen is redrawn.

The second difficulty is physically handling text and graphics as well as design. PageSetter does this by having

three screens — one for page layout, and separate ones for editing graphics and text.

Graphics are the weak point of the program. The graphics editor itself is a simple but reasonable art program. You can grab any portion of a graphic and use it as a brush. You can also draw circles, ellipses and triangles, fill shapes with 16 different textures, draw lines in eight thicknesses, manipulate text, and magnify the graphics to add or remove fine detail.

You can also load any illustrations in IFF format, which means that you can make use of the increasing amount of art available on public domain disks or of drawings from Deluxe Paint, Deluxe Print and similar programs.

The quality of images brought in from other programs is variable, since most are in colour and PageSetter converts them to monochrome. Also available are thirteen screens of ClipArt, which consist of rather dull line drawings of toys, animals, sports equipment and suchlike.

The real problem is one of size. A full-screen illustration in the graphics editor shrinks to something about 5 inches wide and 3 inches deep when transferred to the page.

You can make illustrations bigger or smaller within the graphics editor, but whatever you do, you're stuck with something small on the page. This reduces graphics to a very subsidiary role, as decoration rather than information.

If you want to produce a page with graphic impact, you'll need to leave a space to stick down artwork or a photograph. What is urgently needed is a "size to fit" function so that the graphic will automatically fill a predefined box of any size.

Transferring the graphics to the page is achieved neatly enough. You clip the graphic by putting a frame around it, choose "Exit" from the menu and are instantaneously returned to the page, where you click the graphic into position.

The text editor works in a similar way. You can load text from such word processors as Scribble! or TextCraft, or you can type it within the editor, which has standard word processing functions such as Search and Replace and the manipulation of blocks of text, which can be moved, copied or deleted.

You can also add formatting commands to change the appearance of your typeface, choosing between bold, italic, underline, outlined, shadowed, or reversed simply by typing a backslash followed by the first letter of the command — so typing "\b" sets the following type in bold and "\n" returns it to normal setting.

The typefaces available are those supplied with the Amiga, except that PageSetter offers more sizes. The large type-size is 20 point, available in Diamond and Emerald. And that's simply not big enough for most headings. You can enlarge the type in the graphics editor, but the result can be ugly.

Anyone who wants to create effective publications with PageSetter will need to invest in at least one of the three volumes of Zuma Fonts, available at £29, which each contain three different typefaces in many sizes.

Text can be set centred, flush left or flush right or justified with straight left and right margins. You can micro-justify the text — that is, adding spaces between the individual letters of the words as well as between the words themselves. An extra refinement is "leading", defining the amount of space left between each line of text, which can be a useful method of getting text that would otherwise fall short to fill a particular area.

If you set justified text in newspaper or magazine-styled columns, long words will need to be broken, or hyphenated, at the ends of lines. PageSetter permits "soft hyphenation" — if you add hyphens to long words, then it will use them when necessary. It's probably quickest, though, to do this after you put the words in their columns since moving from page to text editor and back is a speedy process.

into a professionally finished image with . . .

PageSetter

Desktop Publishing for the *AMIGA*

Since the desktop publishing boom started in 1982, the industry has exploded. Software, hardware, books and even trade papers have mushroomed to fill a market, which is expected to reach 50 billion dollars world wide by 1990. Not since the advent of the spreadsheet has a single application made such an impact on the computer industry. Large companies, small groups and even individuals are using their computers to produce crisp, professional flyers, newsletters, signs and resumes quickly and easily, at a fraction of the cost of commercial typesetting. Desktop publishing has brought the power of the press to the people!

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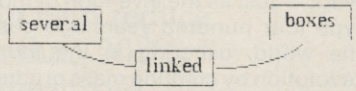

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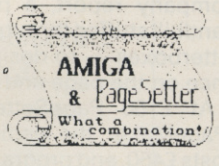

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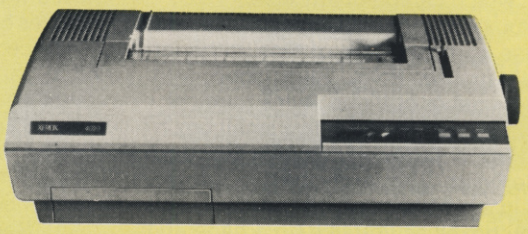

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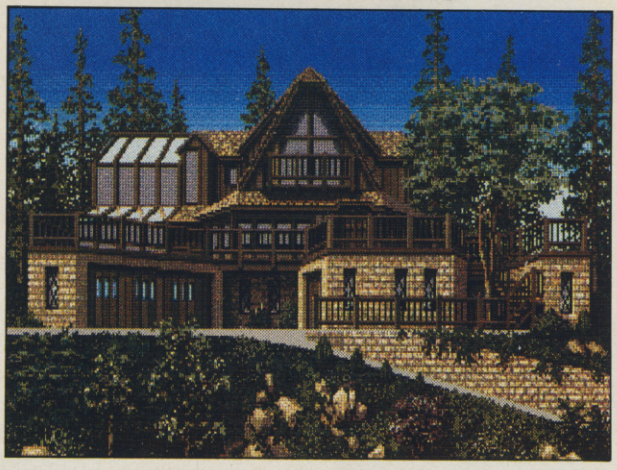

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A box either contains graphics or text in one particular size of type, although you can mix bold, italic, shadowed, underlined or outlined styles together.

Typically, you'd create a small box to hold a headline in a large typeface and, underneath it, a larger box to contain text in a smaller type. You can have as many boxes as you like on a page and they can overlap each other.

Boxes are more powerful devices than mere containers for text or illustration. By clicking on an icon of a chain, boxes can be linked together over several different pages. Then, when you enter text into one box, it will flow to fill other linked boxes. If you alter the text in one linked box, it will be re-formatted in all. You can break links as easily, simply by clicking on a broken chain icon and then clicking in the box.

The final hurdle that any DTP program has to surmount is creating a simple but flexible method of designing pages. Here PageSetter succeeds brilliantly with its concept of "boxes", which work in the same way as the Amiga's windows. You click the lefthand mouse on the page layout to drag out a rectangular

You can re-position or re-size boxes at any time, which can be an especially effective method of clipping graphics to the right size. Graphics can also be moved within the box itself.

Boxes can be transparent, so that one box placed over another will not obscure the other's contents, which can be useful when putting text on graphics, or opaque, so that one box obscures another. You can add 16 different background shades, use five different kinds of borders and a shadow effect.

And if something isn't to your satisfaction in a box, clicking on the Edit icon will take you back to the text or graphics editors — depending on whether you were dealing with words or pictures — to put it right.

You can specify in inches or picas (a unit of measurement in printing which equals a sixth of an inch) the size and the number of columns you want on a page. The page is then automatically drawn with the columns in place so that you can see exactly where to put your boxes. An "autobox" feature then lets you fit a box to the column without having to draw it.

There are a number of useful visual aids: you can toggle between visible and invisible margins and boxes, have a ruler in inches or picas around the top and side of the page, turn on a grid in various sizes and use a "snap" option so that the boxes you draw will be positioned on the nearest grid line. And you can switch on co-ordinates to show the precise position of your mouse-printer on the page.

It has taken the programmers of ReadySetGo three versions to get it right for the Mac, so perhaps we shouldn't complain too much about the deficiencies of this first version of PageSetter.

Its great drawbacks are its inability to generate large-scale images — essential for meaningful graphs and charts — and to produce high quality results from a laser print.

It can't handle super or subscripts (and if you want a £ sign you'll have to draw one!), doesn't have automatic page numbering, won't set type in any shape other than rectangles, has limited fonts and lacks an editor so that you can create your own.

On the plus side, PageSetteris powerful, simple to use, and the concept of boxes that can be shifted and re-sized make it easy not only to design complex layouts, but to rectify any mistakes. For the moment, that will be enough for many users.

J.W.

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Playing the Amiga

Zack Skinner looks at Amiga Gamesworld

The problem with games on the AMIGA is in the eyes of the beholder. What do we expect? What exactly do we want? Probably what we expect is real 'AMIGA games'. Of course, what we really want is a game that uses the knock-you-off-your feet graphic and sound capabilities of this wonder computer. We hope the games will surprise, astonish and delight us in the way we are sure they can, yet games on the AMIGA have hardly done that yet.

'Aha!', I hear you cry, "what about the rave review Commodore Business and AMIGA User gave 'Defender of the Crown' in its last issue? Wasn't that game the answer to a maiden reviewers prayer?" Well, yes, I'm not knocking it. 'Defender of the Crown' has its attractions. It has the first really clever and spectacular games use of AMIGA graphics. It made anything on other 68000 machines like the MAC or Atari ST look very inferior indeed. It attracted, at the UK Commodore Show, enormous admiring crowds. Somewhat to their alarm, high-ups at Commodore, having previously struggled to present the AMIGA as a state of the art business machine, admitted that this game was selling more AMIGAs to people who were terrifically impressed by Mindscape's wondrous graphic 'Cineware' game than anything CBM marketing had previously done in the business line. Mindscape are reputed to have produced — and sold — the largest single shipment of any AMIGA product as far — 20,000 Defender of the Crowns. A million dollars worth of it at one go... certainly not a game to be scorned. Mindscape are pressing on with more AMIGA 'Cineware' games. Next is to be 'SDI' — which, we are told, may not beat 'Defender' in impact but then comes 'King of Chicago' written by 'Defender's' creator and which is reputed to be something to take your breath away or knock your socks off — a real AMIGA game.

Yes, 'Defender' is a very successful production. But perhaps that is because it did have something special — some delightful graphics — pictures to illustrate what otherwise was, it must be admitted a pretty conventional medieval strategy game. Not a bad one but probably even its creators would not claim too much for it as a *game*. Anyway, what was it competing against for judgement?

Which is the nub of the matter. If you are an established Commodore owner, the probability is that you have a 64 or 128. Other CBM computers exist but not in such great numbers. It has been estimated that some *5000 professional* programs have been written for the 64 (and, of course, the 128 in 64 mode); most of them games. Some terrific creative ideas have been carried out, from arcade conversions like Gauntlet to original high speed shoot 'em ups like Paradroid, Combat games like International Karate and 'Fist', Simulations from Microprose like Silent Service and Gunship, Strategy games from SSI, Adventure games from Infocom, even oddities like Marble Madness, Ultima, Alter Ego or Little Computer People. With a 64 the games world is yours. (CBM are welcome to that as a slogan. It's about 2 years too late though)

Now, along comes the AMIGA, around 18 months old in the US and celebrating its first birthday elsewhere, and what have the games players got?
Not... Very... Much... No, not a terrific lot.

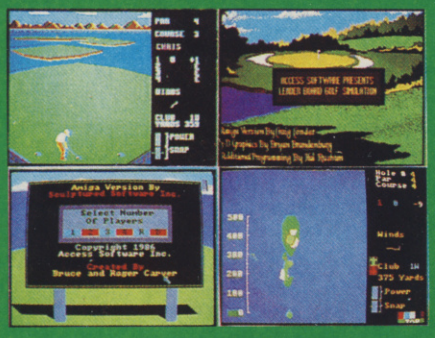
Virtually every game available on the AMIGA is a straight conversion from the 64 range. Only a tiny few quite exceptional games like the extraordinary Mindwalker or 'Defender' stand out. The rest are merely a few degrees better in graphics than their 64 versions but fundamentally remain the same.

Now is this wrong? Well, if you had a 64 and you've bought an AMIGA you might well scream with frustration. Of course, you probably did not buy your AMIGA to play games on but it is an article of faith at CCI that *everyone* will, if they get the chance, play a game sometimes on any computer. So you could feel deprived, get out your trusty 64 and plunge happily back into the gameplay mode.

However, how many AMIGA users were already 64 owners? Probably not as many as you might think. Of the 200,000 or so AMIGAs that have now been sold worldwide, what percentage were previously non-Commodore owners? Nobody, not even CBM, knows that answer. Though I bet they'd like to! But now, with buyers snapping AMIGA 1000s on the strength of 'Defender' and a still wider games playing audience likely to be found by the new 500 (at around $599 or £500 ish) many, many, more once-upon-a-time or even still active 64 owners will be attracted to the AMIGA. And what awaits them and their uncontrollable playing urges? Worldgames, Leaderboard, Temple of Apshai, Little Computer People. . .Just a moment aren't those names somewhat familiar? Yes, every one of them an ex-64 product. Ah, but of course, Epyx, Access, US Gold, Activision have transformed their good but perforce 64K limited games into the wonderous world of the 512K AMIGA. Haven't they? Like hell they have! Each one of these games has the sharp, impression colours that the AMIGA glories in, and that's it for the wonder computer, for each one plays virtually the same as on the old 64.

Now for those first time Commodore AMIGA owners, the reply is 'So what?'. They have an undeniably good game — Leaderboard is certainly not *losing* in quality on an AMIGA! — and if it is not supremely using all the potential AMIGA magic, well that doesn't make a good game bad, does it?. Of course, for the professional — the journalist or reviewer who has seen it all, it's pretty ho-hum... 'I told you there wouldn't be the software', they can say knowingly. Yet, for those with unclouded memories, the early years of the 64 saw something of the same problem. Even though the 64 after the VIC was like swimming in the ocean after a swimming pool, it took time for the familarity of the machine to spread wide and deep, for the programmers & developers to splash out and produce the ideas, the imagination — and the Imagines — that could bring outstanding creativity to bear on the highly profitable games market.

The AMIGA is a much more complex machine than the 64 and will take longer still to dominate and exploit. And, as yet, there are few signs that it is really happening. Developers have been slow. CBM itself, partly due to its financial plight, has taken practically no part at all. In developing big selling entertainment software. Except for the odd case of Mindwalker which seems somehow to have passed into CBM's keeping and, if CBM had any sense it, wold be presented free, to every AMIGA buyer and the author commissioned to fulfil his undoubted genius on any subject he or she chose. (Mindwalker II now there's a truly mind-boggling prospect!)



Leaderboard — U.S. Gold. Price: £24.99

So the AMIGA games problem is really a matter of expectation. If we are ex-64 people we probably expect more than we are likely to get yet. If we are new AMIGA owners, it can be, however, still a great new fun games world. Buy the games? If you've got them already on the 64, no. If you've only (only?) got an AMIGA to play them on, definitely, yes.

Make no mistake they are mostly good games. We looked at six out on the AMIGA now — not counting: Leaderboard, TassTimes in Tonetown, World Games, Little Computer People, Shanghai and Temple of Apshai.

Leaderboard is undoubtably an exceptional sports simulation. It is not protected but you need a dongle plugged into the rear mouse port. Leaderboard gives you the chance to get the feel of a golf course, playing out different levels from amateur to pro. You can play alone or in competition with up to 4 players. You have a choice of club, distance, type of shot (hook, slice, putt etc). It has a practice driving range and a choice of courses. It is certainly fun. It gives several hours of entertaining competition even if you're not already a golf fanatic but it has its faults. The greens don't need much mastering as they appear very similar each time, so it's just a question of finding the strength of shot and the aim up the slope.

Claims by magazines (quoted on the pack) no doubt anxious to please their advertisers that it may be 'the sports simulation of the decade' are clearly exaggerated. The vivid AMIGA colour makes it a sharper and gives it a slight graphic advantage over the 64 version. Otherwise, we could detect little difference. Golf being of world wide interest, we'll bet that you will see a AMIGA golf simulation not too long in the future we hope (maybe a real AMIGA conversion of Golf Construction Set?) that will make Leaderboard look very outdated indeed.

Now TassTimes in Tonetown is a very good adventure and last year's CCI Oskar winner in its class. Ah yes, on the 64. It's certainly no worse at all on the AMIGA. It has style and intelligence that keep you trying hard to disentangle its twisted clues and logic. It is, as many people will know, the story of trying to find your rather odd scientist grandpa in another dimension. You encounter characters not unlike the inhabitants of that 'alienated' bar in Star Wars and some of them have large teeth and are better avoided if you don't want to start the game over. We found 'TassTimes' excellent entertainment, always a challenge to our intelligence and once again with the extra AMIGA sharpness of colour good to look at.

Tass Time in Tonetown —Activision. Price: £24.99

World Games has come to be considered a classic of its kind; one of the most successful "sports compliations to appear on computer. Epyx are famous for this kind of high performance games software and "World Games" does their reputation no harm. It is a game that once started is capable of getting you back to the screen time and time again. It is, to employ that overused word, addictive.

The eight sports it offers are not the most obvious as international events. They are Weight-Lifting, Barrel Jumping, Caber Tossing, Log Rolling, Cliff Diving, Slalom Skiing, and, believe it or not, Sumo Wrestling (for the Japanese market, I suppose) Each game loads separately, which is unnecessary with 512K at your disposal, and rather boring. They are joystick not mouse-driven.

(CONTINUED)

World Games — U.S. Gold. Price: £24.99

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Playing the Amiga *Continued.*

But they are all capable of interesting you and keeping you at it to climb up into the higher scores and on to the gold medal places. Especically, if you are playing in the multiple player options against tough, unscrupulous opponents. In this office the opponents are not just without a scruple to their name but have taken to cheating as a way of life! And the evening we ran World Games, it nearly ended in curtains for the unnamed person who was representing Spain!

All these games, even the Sumo Wrestling, require quick reactions and as much practice as you can afford. "WG" has the well-known neat touches like the national anthems of the different countries, the caber falling on the unfortunate thrower's foot, the barrel jumper landing badly, falling through the ice and going blue and the Weight-Lifter cleverly adding to his bars. Frankly, the graphics are lumpy, childishly created and disappointingly, on the AMIGA almost no better than the 64. Yet once again, you can be captured by the challenge of these, quoting Epyx, "events the Olympics forgot". Just the fun of competing, of trying to beat the natural disadvantages and electronic obstacles of computer-based sport with no more than the clumsy human hand can certainly make it all worthwhile.

Now Little Computer People is rightly a cult game. It never, I believe, really hit the really big seller list outside the US (with the possible exception of Spindizzy what Activision game has, since Ghostbusters?) but there are people who since its introduction in 1985 regard it as unequalled entertainment. It is certainly an oddity, and has that fascination that makes you watch the little monster who takes over your screen with reluctant but unavoidable loyalty. You may not like the little so and so, I frankly cannot stand the arrogant uncooperative little swine — but you will always want to find out what he is going to do next. For anyone (is there anyone?) who doesn't know the plot... When you boot up the disk a house appears shortly to be inhabited by a small human — like figure. He first of all spends some time inspecting the property and if he likes it, moves in. Really nice of him... You can, at first, have no effect on his actions. The keyboard is frozen until he has moved in but later you can influence him by petting him (I kid you not!) by means of an extending hand or by giving him presents like records and so on. I personally would like to give him a present of a kick up the... Well, no doubt that would send him off in a sulk or up to the third floor to watch TV sullenly. He even leaves the TV flickering on when he goes down stairs. Doesn't he know about saving energy?

Little Computer People —Activision. Price: £34.99

My impression is that he moves more quickly in the AMIGA version but his general behaviour is the same as the 64. I understand that there is one version where he goes up into a cupboard and comes out wearing girl's clothes, which doesn't make me like him more. If you know someone who has an AMIGA whom you wish to drive mad, 'LCP' would make a great birthday present. It's a brilliantly developed program, an acutely intelligent piece of work. I hate it!

Shanghai, is, I think, very close to the ancient Chinese game of Mah Jongh. A distant cousin of dominoes, you have to remove tiles from a carefully constructed (random) pile. You must match the varied tiles, illustrated with seasons, numbers and other symbols. When you match one tile with another (the AMIGA lights them up), each must be free to move, nothing resting on them, or you cannot remove them. The game offers a number of options — playing alone (solitaire) or against other players or the computer (not advised!) There are 144 tiles laid out in Dragon's Formation. The positon of every tile is random so you never get two 'Dragons' alike. You can ask to go back and move or look under a tile (and you lose!) or advice on the next move.

Shanghai — Activision. Price: £24.99

Shanghai is excellent fun to play but its demands on the AMIGA (except for memory) are almost nil. But that doesn't stop it being enjoyable. It's a game that is always challenging and is a real time killer (if that's what you want to do with your time!)

Temple of Apshai — U.S. Gold. Price: £24.99

Temple of Apshai Trilogy. Oh dear. This is where the failure of 'AMIGA Imagination' shows most. When it was written it was good run-of-the-mill (or in this case 'run of the castle!) D'n D style strategy game. Your little brown sprite-type plods away through the maze-like castle buying weapons, attacked by spiders, losing energy etc etc etc. It's flat on the screen and flat on the mind. On the 64, well, it was OK-ish. Hey, but this is, believe it or not, an AMIGA... and we have seen 'Defender of the Crown'... Not an unsimilar strategy game but with all those marvellous graphics (including that moment when the heroine shows (and I do mean shows) her gratitude to you. Nothing like that in ' T of S'. It all makes 'Temple of Apshai' look like something off a 1K Sinclair. Someone should take this, address it to Rip Van Winkle c/o US Gold and say, we're in 1987 and we've got AMIGAs — which is a whole new — if not ball — at least strategy game.

I know, that out there something is stirring in the AMIGA game undergrowth, that suddenly all those glorious AMIGA games are going to pour down on me like tropical rain. The colours will be rainbow bright. Their speed will be *faster* than light. Their sound will be sweeter than instant music to our ears. The sheer excitement they will bring will be — well I leave *that* to your own imagaination. They will combine our dreams, with that very special AMIGA magic. They are out there. Those totally awesome AMIGA games are coming, I feel it in my bones, But I suppose I'll just have to be patient for a while yet — and so will you.

Z.M.S.

Flying the Amiga

Maybe one reason why there has not been that much games software developed on the AMIGA that uses its exceptional qualities (see previous pages AMIGA games story) is the fear of developers that someone who can afford to pay four figures (dollars or pounds) in cash for a computer may not be a teenage gameplayer. This was also true of the IBM PC and compatibles when those machines began to be sold in large numbers. Even with the falling prices of the PC clone such a machine is a four or five hundred dollar or pound job. Who is going to buy that to run games? THe answer turned out to be in the U.S. anyway, a hell of a lot of people.

So SubLogic came up with the PC Flight Simulator. Not so much a game, more a way of life... A best seller simulation that makes most others look like cheapo arcade games, Flight Simulator has become such a classic on the PC that grown men — its mostly men who dream of being pilots — are known to allow it to become a constant and all-absorbing factor in their lives. They've got to have their daily flight — or there are withdrawal symptoms.

Now, there is an AMIGA version — or to be exact a 68000 version for it almost precisely the same, not just as the PC, but the Apple version which came out first. None the worse for that, it is extraordinary in its power to trap you in a simulated but totally believable flying environment.

FL II offers 47 aircraft characteristics and multiple windows that show you out-of-the-cockpit and control-tower views using a 3D flight display. It gives you extensive flight control for which you use the mouse or keyboard.

Flight Simulator II features graphics that closely simulate a pilot's actual perspective. The "68000 Precision Graphics Driver" presents solid-modeled images with hidden surface elimination and surface shading.

It simulates two types of aircraft a single engine, high performance propeller driven aircraft Cessna 182, and a business Learjet. The Cessna 182 simulation presents the feeling of flying this particular aircraft in a reallife situation. The business jet simulation is designed more for fun than realism.

All I can say about SubLogic's Flight Simulator is that unless you are a pilot you will probably never get closer to the feeling of being at the controls of a plane. If you *are* a pilot you will appreciate just how faithful a representation of flying SubLogic has achieved.

Just one thing, this is not a piece of software you will buy and use for a few days (it is unprotected and they advise you to take a copy straight away). It has a 130 page manual which you really should read to be able to fly this thing. There are so many instruments and tricks to it that it will not only take you days and weeks to understand, it will take you even longer to master — and even then there will be new tricks and ideas you will learn or want to try. For a sense of total reality it only lacks one thing — to be able not to use the mouse but a joystick. No, not a plastic games joystick but the genuine steel joystick that pilots use in the cockpit of a plane. With one of these and FL II, you would really fly your AMIGA.

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MiAmiga LEDGER

At the present time there is no other 68000-based personal computer that can offer all of the facilities combined within the price range of the AMIGA A1000.

I can vouch for this from personal experience as my A1000 system is more than 15 months old and **every single component of this system has functioned without any fault whatsover.** It is very rarely shut down and is running 24 hours a day, 7 days a week — testimony to the robustness and inherent reliability. A telephone conversation with both Commodore UK and their service-maintenance contractors confirmed the view that very few AMIGA's go wrong. Those that have failed in service generally have been the result of accidental damage by the users caused by incorrect electrical connections or mechanical damage viz. dropping and breaking components.

Robustness of software should be no different and it is crucial in an accounting application that the software demonstrates a similar level of reliability and solidity. Probably the most important requirement is that there must be no way the software can crash. The effects of the system going down when the user is merely doodling with a paint package are insignificant in comparison to the effects of losing a file containing a list of creditors.

MiAmiga Ledger is one of the first general ledger packages to appear for the AMIGA and comes from the same stable as the popular MiAmiga File. Indeed, the similarities between these two extends beyond the visual appearance since files are transportable between the two applications. The product is supplied on a single disk and is easily installed on to a hard disk unit. Where the machine in use has an expanded memory then MiAmiga Ledger will make use of this for storage of transient data while the application is running. There is a minimum requirement of 512k of memory for this software.

The package is designed for use in either the home or a small business and functions as a double-entry bookkeeping and accounting system. All accounting transactions are entered into the system as journal entries containing debits and credits. The journal entries are then posted to user-defined general ledger accounts. This information is then able to produce financial and supporting reports.

The reports are quite comprehensive and should fulfill the requirements of most users. In those situations where the data needs to be consolidated with other data there are no problems since the format of these report files is ASCII. This means that a user could send the data into a powerful spreadsheet such as LOGISTIX and display the results in graphical form.

The size and number of accounts within a MiAmiga Ledger database is dependent on the amount of available memory since the database is held entirely within the system RAM. This has the advantage of enhanced operational speed although this could limit other applications on a 512k machine. The user may have several MiAmiga Ledger databases running simultaneously although access is restricted to only one at a time, thus the database is not relational.

The manual supplied adequately covers the computer aspects of the operation and also discusses basic accounting principles. Sensibly, the author makes it clear that the reader should refer to an accounting textbook for further details of bookkeeping and accounting procedures although he (she) fails to mention that it would also be a good idea to inform and involve your accountant in any project of this nature. The manual contains some useful appendices with helpful suggestions as to the setting up of account headings — always tricky since whenever I have to do it I invariably leave something important out. The menu structure of MiAmiga Ledger looks like this:—

Desk	File	Column	Select	Sort
	Open	Show	By Example	Low to High
	New	Hide	By Range	High to Low
	Save	Left	All Accounts	Single Account
	Abandon	Centre	Selected Accounts	Progressive Accounts
	Status	Right	All Journals	Single Journal
	Memory	Format	Selected Journals	Progressive Journals
	Quit	Rename		
		Show Accounts		
		Hide Accounts		
		Show Journals		
		Hide Journals		

Process	Print
Post Journal Entries	Chart of Accounts
Close Current Period	Journal Entries
Close Fiscal Year	Trial Balance
Install	Balance Sheet
	Income Statement
	General Ledger
	To Printer
	To ASCII File
	80 Columns
	132 Columns

You will note that the emphasis is on sorting of the data and this is accomplished very quickly with a variety of options available. Screen format control is also a strong feature of this package and this too operates at high speed — a reflection of the dedicated graphics hardware. The *status* and *memory* options are useful for monitoring the rest of the system during intensive operations. The printer control and selection is done using those printers defined with the Preferences file, thus most users should experience few, if any difficulties in this area. No problems were encountered with running MiAmiga Ledger with a 68010 processor and installation onto my hard disk was painless.

The first problem I encountered was printing an ASCII report file to disk — the software does not prompt for a file name and defaults to a generic *"Ledger.TXT"* file name. This means that any existing report file is overwritten thus when printing a sequence of files to disk. It was necessary to have a CLI window open and rename the report file before initiating the next file. Easier access to AmigaDOS in the way of directories and file pathways would certainly help. The only other problem was the $ dollar sign. Hope this will be rectified in the next release of the product.

Overall I would summarise MiAmiga Ledger as a fast, robust, simple-to-use bookkeeping package. It manages to accommodate and satisfy the requirements of the three major categories of potential users i.e. accountant, computer user or a person who has skills and knowledge of either.

B.D.

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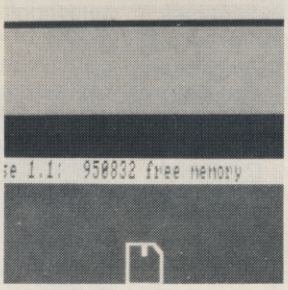

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Alegra Memory Expansion Unit (512K/2M)

By Access Associates

Expansion

Before I received my Amiga all I could do was lounge around thinking of all the wonderful things I would be able to do with 512 thousand bytes of memory. 1 week after I received my Amiga I learned the horrible truth. 512K is not enough! It's ok if you only want to play games and run simple business programmes but when it comes to writing your own programmes or making the most of some of the top of the range programmes you just don't have enough memory. There are several memory expansion units available on the market at the moment but most of them are 2 MB and have a price tag to match — typically £700 — £900. The basic Alegra unit, however, is only 512K and is less than half the price. Half the price for a quarter of the memory? It doesn't sound too much of a bargain does it? However, there are a number of reasons for still going for the Alegra. 1) The initial cost of a 2 Meg unit may simply be too much. 2) The Alegra can be upgraded to 2 Meg at a later date using 1 megabyte drams. I would guess that it would cost in the region of £450 — £500 to purchase the necessary chips at today's prices but as memory prices are tumbling downward on an almost daily basis it could soon be down to a less heart grabbing figure. 3) It is the smallest package available with a footprint of only 3/4" (19 mm) and in my house desk space is at a premium.

Installation

To install the Alegra you need to remove a small screw at the rear. This releases the cover. It can then be plunged into the expansion slot on the rightend side of the Amiga and secured with 2 selftapping screws that are supplied with it. Pop the cover back on and that takes care of the hardware side. If you are using Kickstart 1.2 (not available in the UK at the time of writing) you need do no more as the Alegra will auto-configure the additional external memory when used at this level. If, like the majority of non-U.S. users, you are still using Kickstart 1.1E you will need to install some additional software on your workbench disk. To do this you need to use the installation disk that is provided with the Alegra.

Ideal cure

My Alegra has worked flawlessly for the 3 months that I have had it. The only problem I have encountered is with the proximity of the Alegra to the rear mouse/joystick port. It is only 5mm — 6mm behind it and although it does not prevent me from plugging in a mouse or joystick there is not enough room for me to fit some of my sound and graphic peripherals. It could, however, be argued that the manufacturers of these gadgets should have used standard size plugs. I have circumvented this problem by making a small extension lead to bring the mouse port out beyond the Alegra. Using the Alegra has been a pleasure. It has made working with my C compiler a dream and has reduced the time it takes to compile programmes dramatically, I no longer get those "OUT OF MEMORY" messages just as I am about to finish my latest work of art on my graphics programme, I reckon I have found the ideal cure for 'dem old memory blues'!

I.B.

Price: $379

Zing!

Many readers will have experienced the feeling of being lost sometimes when they are examining a disk for a file. The high capacity of AMIGA disks necessitate a hierarchical directory structure with sub-directories to avoid presenting the user with a single, enormously long disk directory. This is all very well but inevitably can be frustrating on those disks which have plethora of directories and are unfamiliar.

Having located the file you require the next stage usually involves some type of manipulation such as copying it to another disk or looking through it usuing the AmigaDOS *type* command. Either option demands a knowledge of the intricacies of AmigaDOS and when the file is to be sent to a location on another disk several directories deep, the resulting AmigaDOS command line stretches across the screen — ideal conditions for a typo error and a subsequent repeat performance. This product simplifies all this by using the components of INTUITION to present the user with a window containing an easy-to-use file management system.

ZING! is supplied on a single disk along with 32 page unindexed manual and is designed to run under version 1.2 of the system software. Although file management is the main element of **ZING!** it also provides some further useful facilities such as a print spooler, screen display print or save and task activity monitor.

The display window opened after selection from the *Options* menu can be moved or resized and since **ZING!** supports multi-tasking, the manipulations can be done from within another application. These manipulations can be done from within another application. These manipulations are very comprehensive and permit a very high level of pattern matching. Files can also be browsed in either ASCII or hexadecimal format, depending on the type of file. The multi-tasking facilities of the AMIGA are further exploited by the print spooler selection within the *Files* option. This will transmit a file to the printer as a background activity while the user is carrying on with something else. I thought the screen display option very powerful — a screen can be captured and dumped to the printer or saved in an IFF file. A screen from an application running concurrently with **ZING!** could be saved and then read into a graphics application, interfaced with an AmigaBASIC program or used by a database such as SUPERBASE. A good example of use with the latter could be a software database which would display say, the opening screen of a piece of software.

The function keys can be re-assigned to user-designated AmigaDOS functions — a default selection is provided. This allows a customised environment for *power-users* to move around with familiar and often-used commands. The facility to monitor system tasks is somewhat limited to a display window of task priorities and various addresses relating to the task.

I have to admit that **ZING!** has certainly made my file operations considerably easier and makes me wonder how on earth I managed before! In truth the answer was I didn't and I was able to really give the hard disk a well-deserved cleanup — the number of duplicated files was horrendous. I applied the same strategy to some of my heavily populated disks and was able quickly to reconstruct these as well as achieving a greater volume of storage space. Although storage media is continually falling in price, the fact remains that it still costs money and anything you can do to make better and more effective utilisation of your storage media is ultimately saving money. Multiply this factor by the capacity of a hard disk and the savings become even more tangible. For a floppy disk using **ZING!** is very desirable, for a hard disk owner, it is an absolute necessity. By the way, Meridian tell us that they are preparing translations of **ZING!** into the main European languages. **B.D.**

Price: $89.95
Supplier: Meridian Software Inc, P.O. Box 890408, Houston, Texas, TX 77289-0408 USA. Tel: 713-488-2144.
European Distributor: AMILINK, 7 Rue Cherbuliz 1207, Geneva, Switzerland. Tel: 22865442.

The AMIGA Handbook

One day all computers will be like this... Marcus Breuer, the author of this book certainly conveys his enthusiasm for the AMIGA and he does it in a way that communicates the wonders of this computer even to someone who might not ever have handled one. This is a fully comprehensive manual for the AMIGA that should cover all the need for information that anyone might who either has, or is contemplating shortly the acquisition of, an AMIGA. This might not be the highly technical manual such as the Addison Wellesley series also under review in these columns but then most of us may not want to go into that level of detail and expertise. Called the "Handbook" —probably a neat translation from the German 'Hanbuch' in which it was originally published (why not use the word "Manual", the Latin derived word of the same meaning,it is a book precisely designed to be used more for reference than to be read through in one continuous thrust.

It is, without doubt, extremely easy to use in this way; well-developed, covering everything that I could look for that anyone might need to get quite a way along in exploiting the strengths of the AMIGA. The fact that it has been translated from the German, is both an advantage and a disadvantage. The advantage is that it has forced somebody, I assume the translator and editor, to think carefully about how to express, clearly the ideas it contains and the information it wishes to communicate, which is something that is by no means always noticeable about manuals written originally in English. The disadvantage is that in the effort to be clear and faithful, not such great pains have been taken with the grammar and its level of non-technical language is hardly graceful. The book is divided into three sections, each going progressively into greater detail on the AMIGA and its applications. The progressive aspect is clear for the information you gain from one chapter is often used to understand the next. The first section introduces you to the operating of the AMIGA and is mainly for the AMIGA Novice. This can be very useful also for anyone undecided whether or not to buy an AMIGA for it gives enough information clearly and simply to allow anyone to understand the machine even if they have no access to one. It even describes the appearance of an AMIGA —if there is anyone who has not yet seen one!

The other sections cover everything from required knowledge like CLI to programming and the internal mechanisms and a look at the early software releases and peripherals. If I have a criticism of this book, it is that by its nature the coverage of such software as Graphicraft. D Paint etc is bound to become quickly outdated — and is in fact so now. But you will not buy this book for that information anyway. You could get *that* better in this magazine! What you will buy it and use it for is as a constant aid to have at hand when using an AMIGA. It will certainly be worth its price for that.

By the way, the book was written, the notes tell us, with the use of "a Commodore Business Machine B-128" B-128? Is this an unfortunate error in translation or was there a special 128 for Germany?

The AMIGA Handbook Marcus Breuer — Progressive Publishing

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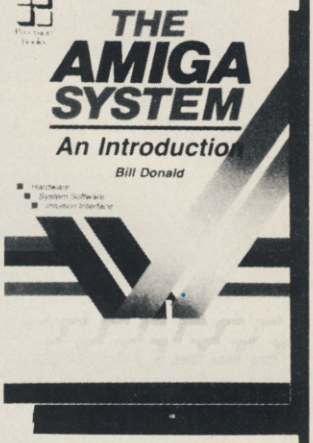

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AMIGA ROM Kernel Reference Manual

Volume One — Exec
Volume Two — Libraries and Devices

This is the third and final release in the technical reference series for the AMIGA A1000 from Commodore Business Machines that are published by Addison-Wesley. The remaining members of the series, (from Bantam Publishing) those dealing with aspects of AmigaDOS will be reviewed in future issues. These two volumes represent the core of just what this powerful personal computer is about and should form the very first purchase from this range of manuals. Note that it is very important that prospective buyers should acquire these volumes together since the subject matter is closely interlocked between them.

It would be fair to say that these two volumes are not the sort of thing you can take for a spot of light reading at bedtime. The subject matter is both complex and extensive, although no one but a fool would say the AMIGA is easy to understand and/or program for it is not. But this raises the question of why this is so and I feel that this has a lot to do with the background of most AMIGA programmers, actual and potential. The vast majority have come from an 8-bit background, usually 6502 machines such as the Commodore 64, Apple II, etc series together with some refugees from the Z80 and 6809 camps. Occasionally someone pops up from the 8088 IBM-PC planet or the Macintosh 68000 world. With the sole exception of the latter, none of these programmers has had any actual experience of 68000 machines; very few will have programmed in the **C** language (in fact many of them will have not even seen a **C** program), and fewer still if any, will have had any direct experience of programming in a multi-tasking environment. I suppose that someone will now ring me up saying that they come from the UNIX, PICK or mainframe worlds but such persons would be an extreme rarity.

Thus the novice AMIGA programmer has to contend with 68000 code, the **C** language and for good measure multi-tasking, none of which is something that can be learned in the course of a week.

Now the complete technical reference library has been made publically available, an overall appreciation of this series is possible — but first an examination of the contents of these two volumes. The first volume with *EXEC,* the multi-tasking controller. *EXEC* lies at the lowest level of the system software, beyond this point and you are onto the hardware itself (see diagram). I don't think that it is any great secret that if you can understand how *EXEC* operates then you have started to unveil this machine. Volume One describes the functions of EXEC and how they are accessed. The means of access is demonstrated through numerous examples in either 68000 assembly language or the **C** language, with a predominance of the latter. I get many questions from AMIGA users about why the **C** language is used as the primary programming language of this machine. This particular volume reveals the reason why — the bulk of the system software routines were written in **C** and by programming in this language your routines will direct interface those of the system.

The volume starts off with an extensive preface about programming techniques and standards required for the AMIGA. There are no less than eight chapters, the first two dealing with *lists, queues* which *EXEC* operates its own internal control. This theme of internal control is expanded upon in the next two chapters which are concerned with *messages, ports* and *input/output.* It is slow going since these are heavyweight concepts and the style of writing makes many assumptions, e.g. fluency in **C** and a high level of computer knowledge. Several re-reads are mandatory and it is impossible to grasp some of the points without reference to other books. However, a basic understanding of these concepts within these chapters is crucial if you intend seriously to program this machine.

Chapters 5 and 6 cover *interrupts* and *memory allocation*. By this stage you are starting to examine *EXEC* in terms of its relationship with the rest of the machine. The present generation of the AMIGA product does not have a built-in mechanism for *memory allocation* of user programs. In other words it is the sole responsibility of the programmer to control the memory requirements of the application. Critics may throw their hands up in horror at this lack of memory management in a multi-tasking system, but don't say you weren't clearly warned. So if your program has a few loose ends or is generally just thrown together then don't blame the system when this program runs out of control and goes wildly stomping all over the rest of the memory. The users of such software will not tolerate the loss of data from your program but any application they may have been running at the same time when yours ran amok. This machine will not accept lousy programming and quite rightly too in my opinion — the user is paying dearly for their software and is entitled to good, solid programs.

The final two chapters deal with *libraries* and *ROMWack* — the latter being a debugging tool. The *libraries* are simply a collection of routines within the system software designed for ease of use and maximum flexibility. This degree of flexibility extends to the programmer being able to add, delete or modify libraries. They are designed in such a way that the programmer does not have to know their location — everything is called by *pointers*, an essential feature of a multi-tasking system. The chapter concerned with *ROMWack* is rather a surprise since this tool is not generally available to users and at the time of writing the only legitimate way of acquiring it is through registration as an official software developer. I have never been too impressed with *Wack* — it is limited in scope, awkward to learn and very quick off the mark to kill the machine, in other words it is too unrefined for general use. My own personal choice for a tool of this type is **METASCOPE,** a much more agreeable product with many more features.

There are four appendices explaining the support routines for *EXEC* and a very useful one providing details of the disk format. The rest of the appendices are the various *include* files for *EXEC* — these are effectively a series of *macros* for use with *EXEC*. The book finishes off with an index although no glossary is provided.

The second volume has the cumbersome subtitle of *Libraries and Devices* and is much more substantial — about 900 pages and together with the first volume provides the user with some 1200 pages. Just over half of the second volume is taken up by the *include* files for the system software components not covered in the first volume and with no less than 18 chapters and 6 appendices indicates that it is not designed for a spot of light reading.

The first four chapters are concerned with the graphical aspects of the AMIGA. These chapters deal with the *graphic primitives, layers, animation* and *text* and account for over 200 pages. Graphics are the principle strength of the machine and the subject is given in-depth treatment. The only flaw to this being that the prospective programmer has to be of an artistic persuasion with a mathematical inclination showing particular emphasis on three-dimensional geometry and trigonometry in order to make the most of what are some very rich pickings. In particular, the animation control system contains some difficult-to-grasp topics and for most the *gels, vsprites* and *bobs* require several repeat readings to comprehend this very powerful aspect of the AMIGA's graphics capabilities.

Chapters 5 and 16 expound upon the *devices* of the system — note that a *device* in AMIGA terms does not have to be a physical entity, *devices* in this context can mean *logical devices*. A *logical device* is something such as the *console, narrator or clipboard* devices. If all of this is confusing then don't worry you are merely suffering from *ASS-HOLES* — a B. Donald definition meaning *Amiga Systems Software Heavily Overloaded Limited Exotic Scoilism*. The coverage of these topics brings the whole of the system software into focus in terms of the rest of the machine and it is here that such matters as the RS-232 serial port, disk drive port and parallel port are discussed.

For the real mathematical freaks, Chapter 17 deals with *floating-point formats, transcendentals* and yet more *floating-points*. I always thought that floating and transcendental was the feeling you experienced after smoking certain herbs — obviously I'm wrong "Get your rocks off with Chapter 17 of the ROM Kernel Manual!" could be the cry of a whole new undiscovered generation of *techno*hippies. The final chapter covers the Workbench and discusses those topics not dealt with in the INTUITION Manual such as the *icon* library.

The remainder of this volume is taken up with the *include files* for the rest of the system software. I would strongly recommend that **all** programmers study these intensively for here is the system laid bare. The files are presented in their **C** language as well as 68000 assembly language format together with the *—fd files* (**f**ile-**d**escriptor files), the latter for the benefits of programmers wishing to access the system software from a programming language other than the aforementioned two. There are two useful sections demonstrating the construction of a device/library file and printer driver using *skeleton* files.

I only have two reservations about this series from Addison-Wesley, the first concerns the relevancy, the second is the contents. The whole series is based on version 1.1 of the systems software. Version 1.2 has already been released in the USA and is not far behind in the rest of the world. There **are** differences between v1.1 and v1.2, not to mention additions. Given the rate of revisions in the AMIGA system software which have averaged one every 6 months since July 1985, there is obviously a conflict between publishing this information in this book form simply because the average leda-time in book publishing is 12 months. I would suggest that the publisher reconsiders the format to take this into account and publishes this series in a way that revisions can be easily implemented, for example by using a ring-binder format.

My other criticism to the publisher revolves around the contents. A work of reference which this series claims to be should contain a lot more **working** examples and not mere outlines or fragments of programs. No one disputes that the contents of this series are heavy going — indeed a lecturer friend made the comment after perusal of these volumes that the level to which these are pitched comfortably places them in post-graduate ability. However, in defence of the publisher the prices charged for this series are quite realistic in relation to the range and depth of their contents. I always use an empirical measure of a book in terms of the cost per printed page and I'm always skeptical of book costing more than £10.00 per 100 pages. If you think this is too lenient then try using this measurement on other subjects and you will see that in these terms computer books in general are a bargain.

B.D.

Name: Amiga ROM Kernel Reference Manual: EXEC
Author: Commodore Business Machines Inc.
Publisher: Addison-Wesley
Price: £23.70
Name: Amiga ROM Kernel Reference Manual: Libraries and Devices
Author: Commodore Business Machines Inc.
ISBN: 0-201-11078-4
Price: £33.20
Contact: Addison-Wesley, Finchampstead Rd., Wokingham, Berks. RG11 2NZ. Tel: 0734 794000.

Metacomco SHELL

No, this is not Metacomco's first excursion into the games market although readers familiar with the *UNIX* operating system will known all about such weird and wonderful things such as *shells*, *pipes* and *filters*. A *shell* as far as AMIGA uses are concerned is simply a Command Line Interpreter — only this CLI is far more tractable and forgiving of the standard issue and provides many useful features.

The opening screen of the *Shell* appears exactly as a normal *CLI* except that the top left-hand corner displays the current directory — the default being the *root directory* of the disk currently in the *df0:* drive. This is a very convenient feature as users of hard disks will confirm, since it is difficult at times to keep track of just where you are in a directory structure. The other immediate difference is the removal of the *destructive-backspace*. In other words a spelling mistake can be quickly recitified without having to tediously re-type the section of the line which was erased by the cursor's movement. Based on the numbers of users who have made comments to me, this is the least loved feature of the standard CLI.

The new or enhanced commands that the *Shell* provides are:

Alias; CD; Equ; Esc; Help; History; Key; Nonres; Path; Pop; Push; Resident; Set.

Some of these commands are those which are part of AmigaDOS v1.2, for instance the *Path* command which provides for the setting of directory *search-paths* in either direct mode or as part of a command-execute file. In addition to these there is a full implementation of editing directly on the command line using combinations involving the *CTRL* key.

The product is supplied on a single disk along with a 106 page indexed manual styled along the lines of Metacomco's previous release for the AMIGA, the excellent *Toolkit*. This manual also provides full details of version 1.2 of AmigaDOS. Installation is simply a matter of copying several files from this disk into specified directories on the user's Workbench disk. The amount of disk space used by these additional files is not significant and will fit onto a standard Workbench disk. This assumes that your Workbench disk is not absolutely full although one solution would be to delete the CLI file itself. Be careful, there are some applications that specifically call for the CLI from the Workbench disk. The *Shell* allows for incorporation into the *startup-sequence* command-execute file which enables you to configure it to individual requirements. No problems were encountered with operations using a Microforge hard disk or running on an expanded A1000 machine using a 68010 processor.

The *Help* facility is engaged using the keyboard **help** key (naturally!) and provides an immediate on-screen list of the functions and their required parameters. Unfortunately this overwrites part of the users existing screen and I would have preferred a separate window. The other feature I found immediately useful was the function key with an AmigaDOS command string. For example I regularly archieve my word-processing files on to 5.25 inch disks (before you ask, it is because they are cheaper than 3.5 inch disks!). Doing this with a programmed function key is much simpler and faster — here is the actual configuration sequence:

key 1 copy dh0:applications/scribble/
key 2 to df2:

When F1 is pressed the following appears on the screen:

1> copy dh0:applications/scribble/

All that I have to do is fill in the name of the file(s) and then press F2. This gives the following display when our file is named *"wombat"*:

1> copy dh0:applications/scribble/
wombat *to df2:*

It is easy to see the time-saving that this facility offers when repetitive commands have to be used as well as avoiding spelling mistakes on the part of the operator. For the advanced user sections of text within an ASCII file can be *aliased* — in other words complete paragraphs can be temporarily substituted with a single character.

Another very useful feature of the *Shell* is a command line history. This will recall a command line — the number of lines that can be referenced backwards is determined by the user together with the ability to select and reuse a line. Very handy when you are compiling and linking series of files. As a hard disk user one troublesome area has always been disk directories. By its nature a hard disk requires many levels of directories and in my own case the navigation of 21 megabytes of files can be tricky at times in terms of remembering just exactly where I am on the hard disk. The *Shell* will remember the directories the users has visited and switch between them on a single key! This is done by means of the *push* and *pop* functions — assembly language programmers will no doubt recognise the stack mechanism. If the user issues the command *push*, the *Shell* makes a note is of the current directory; to recall the directory the command *pop* is used. Naturally if these commands are assigned to a function key then the whole operation is very fast.

Unfortunately lack of space prevents me from elaborating on the full range of facilities the *Shell* offers. In common with its predecessor the *Programmers Toolkit*, this is another first class product from Metacomco. Not only have I found it an indispensable aid when operating at the DOS level, my own view is that this produce *is the CLI the AMIGA should have had from the birth of the machine.* Go back to the normal CLI? No thanks — it was rather like trying to jump fences with a three-legged horse. I just hope that Metacomco will maintain the flow of powerful and useful utilities for the AMIGA beçause this company seems to have the unfailing ability to recognise exactly what users need and want.

B.D.

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Soundscape — Pro Midi Studio

By Mimetics Corporation Modular

The Soundscape Pro MIDI Studio is not just another 'Music Programme' but is a complete music package running under a dedicated multi-tasking music operating system. It comprises several programmes called modules that run simltaneously and independently of each other. These modules use MIDI to transfer music data back and forth to each other and between the Amiga and any external music equipment you may have connected to it. MIDI as I'm sure you know, is an acronym of 'Musical Instrument Digital Interface' which is a series of specifications agreed on by various electronic musical instrument manufacturers to enable their equipment to communicate with that of any other manufacturers using the same standard.

The modules on the Soundscape disk are:

CLOCK — Used to provide timing signals and synchronize modules and external MIDI devices.

CONSOLE KEYBOARD — Enables you to use the Amiga's keyboard as you would a synthesizer keyboard.

MIDI IN — Passes signals from external MIDI devices via a MIDI adapter to the other modules.

MIDI MIXER — Accepts input from the other modules on any of 16 different MIDI channels. It mixes together any signals that come in on the same channel and sends the result out on the same channel.

MIDI-OUT — Sends signals from other modules to external MIDI devices.

PATCH-PANEL — Allows you to route signals from any module to any other module by simply pointing to the icons of the modules you wish to link. Double clicking on an icon gives access to that module. Soundscape has been designed with expandability in mind and as additional modules are released in the future it will automatically add icons for them in the patch panel.

PLAYER PIANO — Displays incoming notes on the screen as a graphical representation of a piano keyboard. The keys equivalent to the notes received change colour.

SAMPLED SOUND PLAYER — Plays notes sent to it from other modules or external MIDI devices using sampled sounds. These samples can be edited and modified to create new sounds/instruments. It will also let you create your own sampled sounds when used in conjunction with the Soundscape Sound Sampler which is available separately.

TAPE DECK — Records signals coming in from other modules or external MIDI devices. These recordings can be mixed, transposed or edited and then played back, driving any other module or external MIDI device required. TAPE DECK can be MATCH and TRIGGER. The PLAY and RECORD modes are self explanatory. When invoked, ECHO mode waits for an input from the Amiga's keyboard or other input source and checks the distance between it and middle C (C4). It then goes on to play whichever track you selected, transposed by this amount. TRIGGER mode will play back a track when it 'sees' a pre-determined trigger note, i.e. if a C had been chosen as a trigger note then playing any other note will have no effect other than to play that note. However, if a C is input, then the track selected will start to play. Inputting another C before the track has finished will reset it and it will start from the beginning again. MATCH Mode is an aid to learning scales, songs, rifts etc. To operate, a pre-recorded track is started in MATCH mode. The tape deck will play the first note of the track and then wait for the same note to be entered on the Amiga's keyboard or on an external MIDI keyboard. If you enter the same note it will proceed to play the next note and so on and so forth through the entire track.

Professional

To cover all of the features of Soundscape would have taken me several days and numerous reams of paper. It is a professional quality music package designed to be both flexible and expandable. It is icon driven and makes good use of the Amiga's friendly Intuition interface. It's easy to drive even for those more interested in the music than what makes Amiga tick. The Sound Sampler is great and is capable of some very impressive 'tricks'. It should keep most electronic-music buffs and novices alike amused for ages. Listening to some of the multi-track recordings provided with Soundscape can be an experience in itself (I think the term is AWESOME). I found Soundscape fairly heavy going initially and it took me several late night and dozens of cups of black coffee to learn how to drive it anywhere near its full capabilities. The 112 page manual is probably fine for anyone familiar with the world of MIDI, multi-tracking and mixing but may seem a little bewildering to anyone dipping their toes for the first time. For the casual music experimenter Soundscape may be a little over the top in terms of money as to make full use of its power would require the Pro MIDI Studio, a MIDI compatible keyboard/-synthesizer, the Soundscape MIDI interface and the Sound Sampler. A quick tot up gave me a figure in excess of £600 but you would have to pay far more to achieve the same result from any other source.

Verdict

If you are just an enthusiastic dabbler you could probably pick up a nice all singing and dancing synthesizer for less money, use up less desk space and save on the coffee! But if you have an Amiga, and have a need or an urge for a powerful and professional music 'tool' then I would have no hestitation in recommending Soundscape. It is by far the best MIDI music package I have ever had the good fortune to use.

Soundscape — Pro MIDI Studio £184.95
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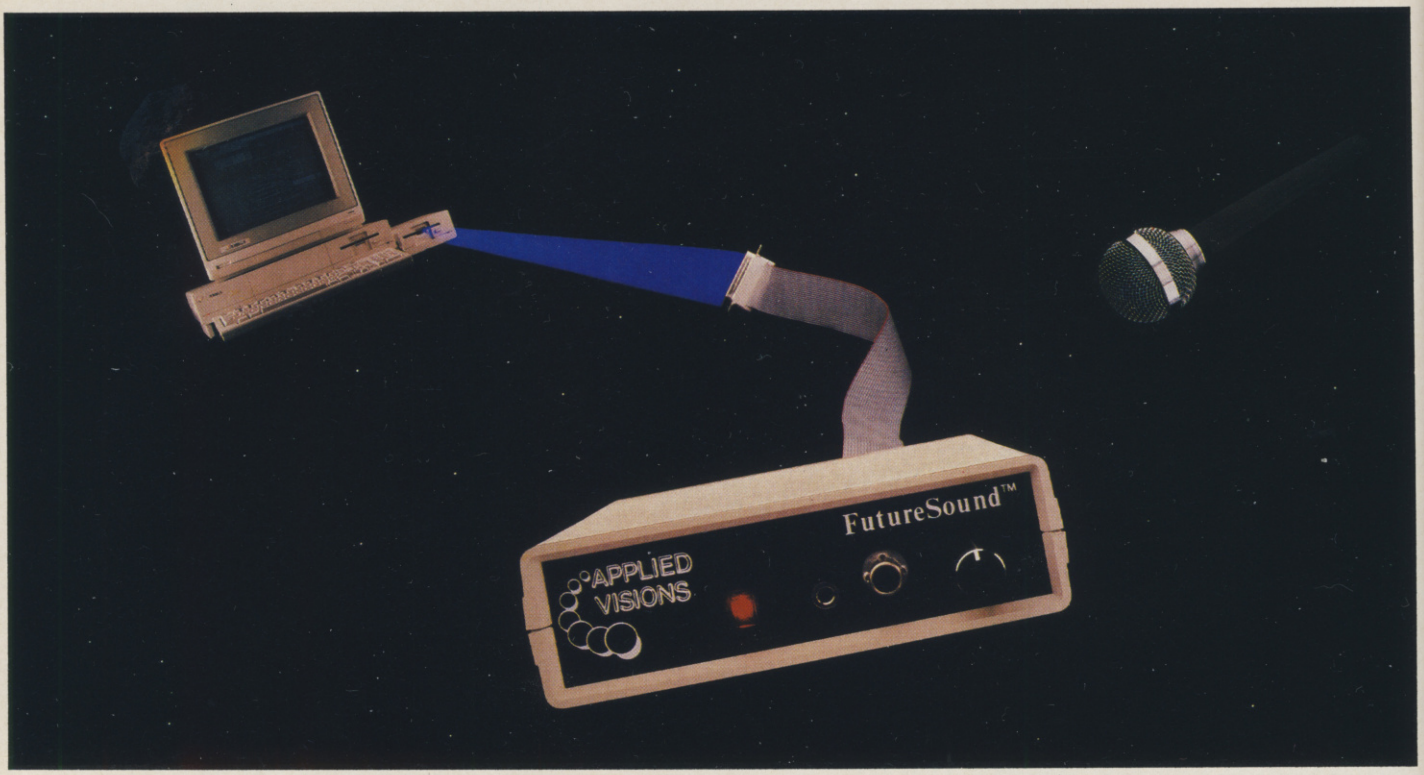

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...CONTINUED!

On day four, I had to stop due to exhaustion.

You see, I play to win, concentratedly. Days go by and I lose track, in the time-honoured fashion. I'm lucky in that I work in blocks and between them can devote my time to concentrated gameplay. The Pawn had me fully in its grip and now I was getting places. Unfortunately, the clues had run out. No more help from the book. Anyway, typing them in had been a nightmare due to the unbelievable keyboard of the computer loaned to me by Magnetic Scrolls. You see, all the keys repeated at the slightest touch, causing hundreds of errors in my usually more accurate typing.

And all this was before the devil and the dragon.

On day five, exasperated, I had to ring up yet again. This time I spoke to a lady who identified herself as Anita and gave me some hints and generally soothed my furrowed brow. Refreshed, I returned to conquer all, armed with the new information, confident I wouldn't need to bother them again.

I was back on the phone first thing in the morning. My position hadn't changed. I still couldn't get past the dragon and the devil just killed me no matter what I said. I was convinced I had tried everything. This can't be right, I though. It wasn't.

The taciturn Ken finally had to put me straight.

I'm going to pass on the hint he gave me about the dragon as it was the writers allowing themselves the last resort of pedantry to make a puzzle harder. To my mind this was a shame as it shifted the climax of the adventure to getting past the dragon instead of the confrontation with the sorcerer, as it should have been, due only to the inordinate time it took to figure out the puzzle. So here is the clue, hot from the authors: having found something to distract the dragon you must do it twice, finding two different verbs to describe the same action. These two input statements must also be consecutive. Tedious, huh?

The other, devilish problem, was a bug in the save-game facility which causes the devil to kill you, even after you have input the right text. You will know when you got it right as the correct text screen appears, but you get no opportunity to move before your demise. To remedy this, go back to a previous save and work your way through to the current position. Auld Nick should then be a little more enlightening, asked the right question.

So that was it. Seven days. Is this a record? Almost certainly not, I expect, but I felt wonderful until the anti-climax set in and I got to wondering how on earth I could occupy myself now. I rang Magnetic Scrolls to tell them the good news (and also to tell just how much I had enjoyed The Pawn). They seemed pleased for me and after a chat we arranged for them to return my computer. Ken dropped it off to me.

"Did you find the fault". I asked?

"Kind of", he replied. "We know it's the Vic chip but we can't get the spec for it from Commodore to find out why it isn't performing correctly."

"So is there anything I can do?"

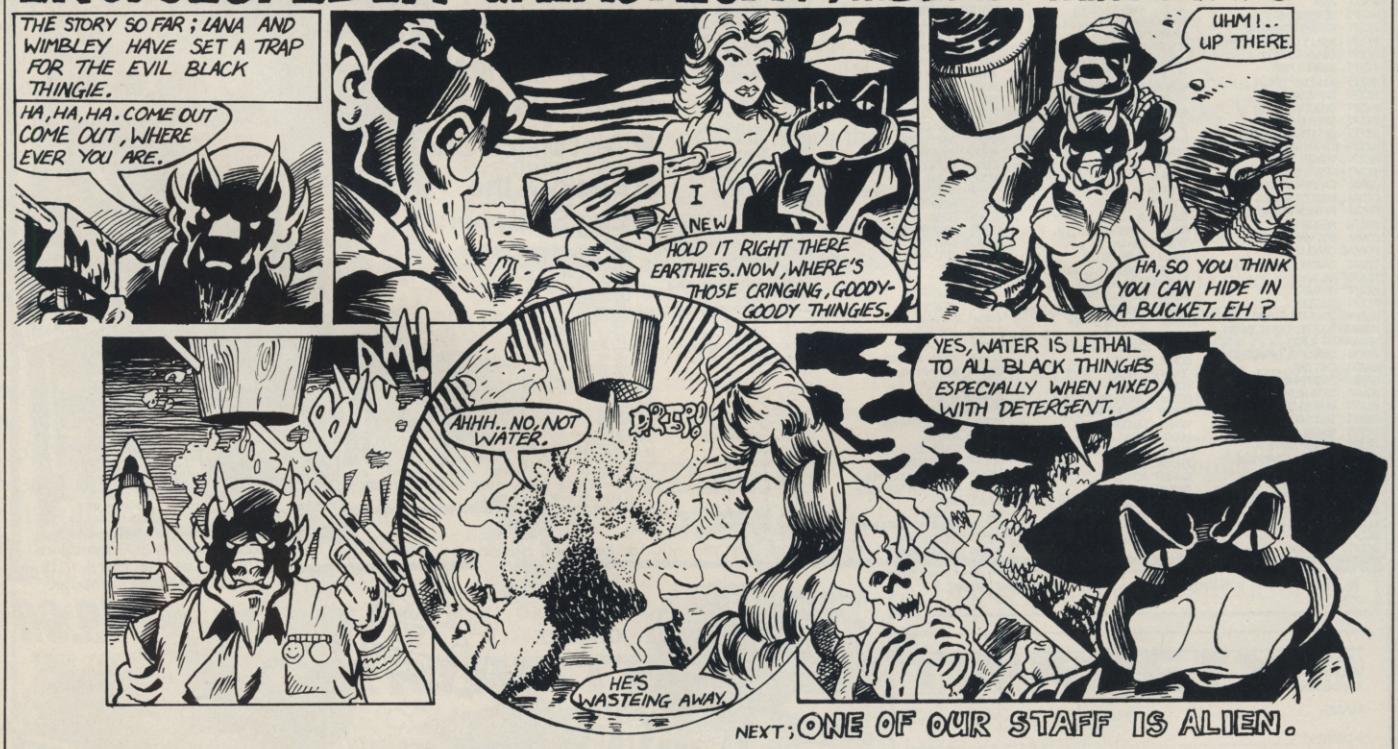
"Buy another chip".

I shrugged, considering whether it was worth it. After all, I only had this problem with The Pawn and I had finished that, so what was the point. I said as much to Ken. The merest glimmer of a smile crossed the otherwise impacable features.

"We have this new game coming out soon....." he said.

Oh dear. How much is a Vic chip, anyway?

ENCYCLOPEDIA GALACTICA 10; THE BLACK THINGIE. PART 3.



NEXT; ONE OF OUR STAFF IS ALIEN.

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Program

SPRITE 128

By Ian Bennett

C-128

This programme was inspired by a letter I received from Michael Grant of Bedworth in Warwickshire. In it he mentions the problems that tape users have in saving Sprite data ie having to resort to using the monitor etc. One solution put forward by Michael is for games writers to leave the designing of the Sprites to the users with the aid of the 128's inbuilt SPRDEF. The writer need only list the number and type of Sprites, ie:

Sprite 1 is your spaceship
Sprite 2 is an alien
etc etc

Many of the queries I receive about the Sprites on the 128 stem from the lack of information about them in the 128 System Guide which accompanies the computer when you buy it. Here are a few facts which I hope will put you back on the path of fame and fortune.

The default Sprite data storage area is 3584-4095 ($OEOO-$OFFF). This area can be changed using the Sprite data pointers which live at 2040-2047 ($07F8-$07FF) or 8184-8191 ($1FF8-$1FFF) when using hi-res. Most of the 64's pokes will work on the 128 ie:

This is a program to generate data statements from Sprites generated with SPRDEF.

Enable Sprites — POKE 53269, PEEK(53269) AND(255-2^x)
Where x = Sprite number (0-7)

Colour Sprites — POKE 53287+x, colour
Where x = Sprite number (0-7)

Position Sprite — 53248-53264

Expand Sprite — 53271 (Y direction) 53277 (X direction)

Sprite to background priority — 53275

Sprite collision priorities — 53278, 53279

I strongly recommend anyone interested in programming the 128 to get their hands on a copy of the 128 PROGRAMMERS REFERENCE GUIDE where you should find most of the answers to most of your problems.

SPRITE 128 is a programme to put your Sprite definitions created with SPRDEF into data statements. Type in the program making sure to save it before trying to run it. Once debugged and saved you can proceed to design your Sprites using SPRDEF. When you have finished your masterpieces load in SPRITE 128 and run it. You will be presented with 'FIRST LINE NUMBER FOR DATA' to this you give the line number at which you want your Sprite data statements to start. You are then asked for the first and last Sprite numbers of the Sprites you want. The defaults are 1 and 8. If you only want one Sprite ie Sprite 2 then type 2 for the first and last numbers. When all the data has been written the programme will delete itself leaving only the data. I hope this will be of some use to all you keen BASIC 7.0 programmers. Many thanks to Michael for his input. Keep the ideas and questions rolling in.

I.B.

```
1 REM *** IAN BENNETT 7TH NOV 1986 ***
2 POKE53280,0:POKE53281,0:B$=CHR$(157)+CHR$(157)+CHR$(157)
3 PRINT CHR$(5)CHR$(147);:INPUT"FIRST LINE NUMBER FOR DATA";A:B=A
4 PRINT:IF A<22 OR A>63000 THEN RUN
5 PRINT"FIRST SPRITE NUMBER   1"B$;:INPUT F:IF F <1 OR F> 8 THEN 5
6 PRINT"LAST SPRITE NUMBER    8"B$;:INPUT L:IF L <1 OR L> 8 THEN 6
7 IF F > L THEN 5: ELSE T=3584+(F-1)*64:O=3583+L*64
8 Z$="":FOR P=0 TO 7:Z$=Z$+STR$(PEEK(T+P))+",":NEXT P
9 Z$=LEFT$(Z$,LEN(Z$)-1):IF T>O THEN 16: ELSE A$=Z$:Z$=""
10 FOR X=1 TO LEN(A$):D$=MID$(A$,X,1)
11 IF D$=CHR$(32)THEN NEXT: ELSE Z$=Z$+D$:NEXT:PRINT CHR$(147);
12 FOR DL=1 TO 8:PRINT CHR$(17);:NEXT:PRINT CHR$(5);:PRINT A;"DATA ";Z$
13 PRINT CHR$(144)"A=";A;"+10:T=";T;"+8:O=";O;":GOTO 8"
14 POKE 208,2:POKE 842,13:POKE 843,13
15 PRINT CHR$(19);:FOR X=1 TO 6:PRINT CHR$(17);:NEXT:END
16 PRINT CHR$(147)CHR$(5)"DATA LINES FROM"B"TO"A-10:PRINT
17 POKE 208,1:POKE 842,13:PRINT CHR$(144)"DELETE -17";CHR$(19)CHR$(5);
   :END
```

The Trojan Light Pen

for the

PLUS/4 & C16

Trojan Light Pen

Light Master must be the first light pen on the C16 and within the memory limitations they have done an excellent job.

When I first got the package I had problems making it work but after fine adjustment of the brightness and colour it started functioning beautifully. The list of options are as follows:

1. Dot — with this option you get pixel perfect accuracy for your drawings.
2. Line — Pretty obvious, draw a line at any angle, of any size, too bad you can't make them curved.
3. Box — another obvious one but you can't draw parallel.
4. Rays — one of my favourites, draws lines outwards from a point of your choice. Creates great effects.
5. Triangle — draws any type you want.
6. Circle/Ellipse — draw circles and ellipses with ease —though it's hard to draw an accurate circle.
7. Banding — similar to 'Line' this one, but where the end of one line starts the next one begins.
8. Fill — fill any shape you've drawn with one of the 120 colours at your disposal.
9. Pen 1, 2, 3A — good addition this stops the lines and colours merging when they cross over.

The Plus/4 has these extra options:

10. Freehand Draw — enables you to draw as normal.
11. Brush — similar to above.
12. Copy — copy any area of picture drawn.
13. Text — write on the screen in a choice of sizes.
14. Wash — don't know about this one — sounds good though.

This is an excellent package and at £19.95 is very good value. I rate it very highly if it were a game —Mega — almost Awesome. If it could have been a little cheaper I would have had no reservations whatsoever. But it is just what the hard done by C16/Plus 4 owners have been waiting for — well done Trojan.

Price: £19.95
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Program

Uni-Tape Header Reader

by Clive Whitaker

A programme to read tape headers. It has some nice features and will work with most CBM machines.

In the past, there have been many versions of a program which will 'read' a cassette tape header. Invariably these have only extracted information such as the program name, the start/end address and the program length. However, there is one more piece of information which lives in the first byte of the header. This byte is used to inform the computer in which format the data was saved, ie Basic, Machine Code or as a Sequential file. In addition, by using some of the above information, you can find out even more about how your program was saved, ie an approximate load time and the likelihood of the program having been saved using a Turbo and/or an Autorun routine.

Since the Commodore range of computers (except the 'AMIGA') each handles the tape header in much the same way when saving and loading, I decided to write a program, which would not only supply all of the information mentioned above, but would also run on a range of computers, ie the C128, C64, VIC20, PLUS 4 and the C16.

It must be said, that this utility will only tell you how a program was saved, ie as Basic or Machine code, and should therefore only be treated as a guideline as to the type of program being read.

The approximate load time, is taken from when the program is 'found', to the end of the load. In order to compensate for the variance in speed between different Datasette's, you should first record the time taken to load a Basic program, then using this utility to find the program length, divide the length of the load time. The result will be the value of 'BA' in line 10. Repeat the procedure with a Machine Code program, for the value of 'mc', also in line 10.

In order to ensure this utility will run on each of the computers mentioned, you should substitute the value's in line 10, of 'LOC' (Start of cassette buffer) and 'SCREEN' (Bottom of screen memory) with the appropriate values, which can be found in table A.

```
1 REM          **************************
2 REM          *      UNI-TAPE HEADER     *
3 REM          *           INFO.          *
4 REM          *                          *
5 REM          *            BY            *
6 REM          *       C.R.WHITAKER       *
7 REM          *         DEC 1986         *
8 REM          **************************
9 REM
10 LOC=2816: SCREEN=1024: MET=65535: BA=49: MC=51: REM ***** SEE TEXT *****
20 D$=CHR$(17): FOR X=1 TO 9: E$=E$+D$: NEXT: X$=" 0": Y$="0"
30 DIM H$(15): FOR I=0 TO 15: READ H$(I): NEXT: R$=" PROGRAM NAME..... "
40 GOSUB 380: PRINT TAB(8)E$;: PRINT"INSERT TAPE AT CORRECT"
50 PRINT: PRINT TAB(9)"POSITION TO BE 'READ'"
60 PRINT TAB(6) LEFT$(E$,4);: PRINT CHR$(18)" PRESS ANY KEY TO CONTINUE "
70 GET F$: IF F$="" THEN 70
80 OPEN1: CLOSE1: GOSUB 380
90 M=PEEK(LOC): IF M=4 THEN R$=" FILE NAME..... "
100 PRINT: PRINT: PRINT R$;: FOR X=LOC+5 TO LOC+20: C=PEEK(X)
110 IF C>192 THEN C=C-128
120 IF C<34 OR C>95 THEN 140
130 PRINT CHR$(C);
140 NEXT: S=(PEEK(LOC+2)*256)+ PEEK(LOC+1)
150 E=(PEEK(LOC+4)*256)+ PEEK(LOC+3): L=E-S: IF E <S THEN L=(MET-S)+E
160 IF M=4 THEN S=0: E=0: L=0
170 PRINT: PRINT: PRINT" START ADDRESS..... DEC";S: H=S
180 PRINT TAB(30) CHR$(145)" HEX ";: GOSUB 410
190 PRINT: PRINT" END ADDRESS..... DEC";E: H=E
200 PRINT TAB(30) CHR$(145)" HEX ";: GOSUB 410
210 PRINT: PRINT" PROGRAM LENGTH.... DEC";L: H=L
220 PRINT TAB(30) CHR$(145)" HEX ";: GOSUB 410
230 T=L/BA: Z$="BASIC": IF M=3 THEN T=L/MC: Z$="MACHINE CODE"
240 IF M=4 THEN Z$="A SEQUENTIAL FILE": PRINT: PRINT: GOTO 290
250 IF S<SCREEN THEN PRINT: PRINT: GOTO 290
260 T$=STR$(T): IF T<60 THEN Y$=LEFT$(T$,3): GOTO 280
270 X=INT(T/60): Y=T-(X*60):X$=STR$(X):Y$=STR$(Y):X$=LEFT$(X$,3):Y$=LEFT$(Y$,3)
280 PRINT: PRINT" LOAD TIME.....";X$;: PRINT"MINS ";: PRINT Y$;: PRINT"SECS"
290 PRINT: PRINT" SAVED AS..... ";Z$
```

CONTINUED ON PAGE 78

Micronet Moving Worldwide

Micronet has probably brought viewdata to more micro users than any other similar system in the world. It is the largest information provider on Prestel — the UK Viewdata (or Videotex as it is called in other countries) service. Micronet's range of services is still increasing. They include Celebrity Chatline on which CCI's Managing Editor recently faced a highly informed, sharply questioning audience. Someone at Micronet told him that Commodore owners were just that little brighter than other micro owners. Not altogether a surprise!

About 30% of all Prestel subscribers are Micronet members as well. Micronet however, is not confined to the UK and is currently involved in worldwide activities.

Micronet began life purely as an information service offering news and advice to a hard-core of micro enthusiasts, but has developed many unique applications for the Prestel software enabling its members to communicate with each other on an unprecedented scale. As its services grew, so did its membership, and consequently, the telephone traffic generated by Micronet members. As a result, Micronet is seen by many countries throughout the world, as being the standard on which they should model their videotex services.

Trigger product

Simon D'Arcy, Micronet's Commercial Director explained, 'What many countries need is a trigger product that will generate interest — a Micronet-type service is ideal. In a sense, our database justifies the whole concept of introducing public videotex system for those countries starting out.'

It all started with G.E.C.'s bid for an Italian contract. The competition was strong — I.B.M., Olivetti, and even I.T.T. all bid to create a videotex system for S.I.P., the Italian telephone company. If G.E.C. were to win the contract, they would need to include Micronet in the package thus providing the trigger product that would give the Italians an immediate application.

Database management

G.E.C. subsequently won the contract on the basic that Micronet — in the form of D'Arcy and Technical Director Mike Brown — would provide the support to actually launch the service in Italy. This included not only the software that was needed, but also the training and advice in database management and the operation and marketing of the service as a whole.

Mike Brown commented, 'Most of the editorial material will be created locally by the service operators, LAZERNET 800. We have already installed 'Chatline', and Lazernet are busy translating all of our free software into Italian.'

Italy isn't alone in having an interest in Micronet. Countries already running Micronet include Hong Kong, Israel and Belgium. Micronet have also been approached by Australia, Portugal and Greece. New Zealand, as well, already has a system installed and are presently carrying out feasibility studies as they have an enormous number of micro users there.

At the moment, much of Mike Brown and Simon D'Arcy's time is taken up with Malaysia whose system in Kuala Lumpur is in its infancy. Their videotex system, TELNET, is very much underused but again they are presently negotiating with Micronet in the hope that they will be able to stimulate interest in videotex in an otherwise buoyant computer industry.

Micronet's aim is for all micro users to be able to communicate with each other no matter how far apart they may be. This is technically feasible already, but telephone costs are prohibitive. Simon D'Arcy commented, 'International Packet Switch Stream provides cheaper international online charges, and we hope that as international data traffic increases, so the cost will ultimately come down.'

An intereting overlap is that Prestel Education is part of the microcomputing CUG (Closed User Group) and Micronet hope to represent Prestel's educational database when abroad as well. Much of the educational software would be greatly valued by other countries and would provide them with yet another immediate application for their videotex systems.

The next step for Micronet is the introduction of their own in-house editing facilities with their own mainframe computer carrying a replica of the Micronet database. All of their editing will be processed locally with instant updates on Prestel.

Mike Brown said, 'We will shortly have a total in-house editing package using Commodore Amigas as terminals. This means that each frame can be displayed or altered in an instant. We have enhanced the software to such an extent that it is probably the most sophisticated videotex package in the world. Hopefully, it will mean that other countries not only buy our network service expertise, but editing system as well.'

Simon D'Arcy, Commercial Director.

Global Marathon

Micronet and its members are currently sponsoring a member of a team — one of four — that will set off on the oriental route of what is claimed to be 'the largest ever Marathon' — by bicycle.

Micronet is sponsoring Aiden Prior whose team will, after leaving Hong Kong cross China, including riding along the Great Wall and continue along the Arctic Circle then down through Denmark, Germany and finally — after covering approximately 12,000 Kilometers coming to rest at Amsterdam, followed by a rally with other bikers to London.

A.M.

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Program

```
300 IF M=4 THEN PRINT: PRINT: PRINT: GOTO 340
310 PRINT: PRINT" AUTORUN AND/OR TURBO SAVED ";
320 IF S> SCREEN THEN PRINT"UNLIKELY ": PRINT: GOTO 340
330 PRINT"LIKELY ": PRINT
340 PRINT: PRINT CHR$(18) CHR$(29)"(Q)TO QUIT.....(R)TO READ ANOTHER TAPE"
350 GETF$: IF F$= "R" THEN RUN
360 IF F$<> "Q" THEN 350
370 PRINT CHR$(147): END
380 PRINT CHR$(147):PRINT TAB(8)"***"CHR$(18) "TAPE HEADER INFO "CHR$(146) "***"
390 PRINT: PRINT TAB(18)"BY": PRINT: PRINT TAB(8)"C.R.WHITAKER...DEC 1986"
400 RETURN
410 P1=0: IF H=>4096 THEN P1=INT(H/4096): H=H-(P1*4096)
420 P2=0: IF H=>256 THEN P2=INT(H/256): H=H-(P2*256)
430 P3=0: IF H=>16 THEN P3=INT(H/16): H=H-(P3*16)
440 PRINT H$(P1)H$(P2)H$(P3)H$(H): RETURN
1000 DATA 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
```

Breakdown of Program:

LINE 10 Set up 'local' variable. See text/table.

LINE 20-70 Set up variables, print title page and wait for key to be pressed.

LINE 80 Open channel 1 and load Tape header into cassette buffer.

LINE 90-140 Read cassette buffer, ignore control characters and print Program/file name.

LINE 140-160 Read cassette buffer and calculate (in Decimal) Start (S)/End (E) Address and Program Length (L). By nature a Sequential File has no start/end address, therefore if a Sequential File is found, then S, E and L will all be set to zero.

LINE 170-220 Print S, E and L in Decimal. Calculate and print S, E and L in Hexidecimal.

LINE 230-290 Calculate and print approximate load time. Evaluate and print save format, ie Saved as... Basic, Machine Code or Sequential File.

LINE 300-330 Evaluate and print the likelihood of the program having been saved using an Autorun and/or turbosave routine.

LINE 340-370 Option to run another tape header or to end program.

LINE 380-400 Title subroutine.

LINE 410-END Decimal to Hexidecimal conversion subroutine.

TABLE A

	C128	C64	VIC20	PLUS4	C16
LOC	2816	828	818	818	
SCREEN	1024	1024	7168	3072	3072

C.W.

ATTENTION ALL PROGRAMMERS!!

You may be an experienced programmer – you may be a beginner. Either way, you may have come across some useful tips which could make life easier for other CCI readers.

Or maybe you have written a program, either in Basic or assembly language, that you feel is worthy of publication.

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Please enclose a SAE if you wish to have your program returned to you. Please package disks or cassettes carefully!

The address to send contributions to is:
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Program

Windows Galore on the C64

by Peter Lager

With this program any rectangular portion of the screen together with its associated colour memory can be saved to a storage buffer. The portion of the screen saved is called a window and can be displayed at any time and at any position on the screen with incredible speed. This ability can be used in pull down menus or animation of LORES displays etc.

This is a utility type program. It will help BASIC programmers to give their programs a professional look by enabling them to include windows.

PROGRAM DETAILS

1) The machine code resides in high RAM from 52224 ($CC00) to 53227 ($CFEB). This leaves 3k from 49152 ($C000) to 52223 ($CBFF) for other machine code programs or as part of the storage buffer for windows.

2) It is possible to create windows of any size from 1x1 to 40x25 characters (full screen), to calculate how much of the buffer a particular window requires is very simple. A window of width (W) and height (H) requires HxW bytes for the screen memory, the same for the colour memory and 5 bytes to store the window number, width, height and a two byte pointer to next window in the buffer ie 2xHxW+5 bytes. The way a 3x2 window is stored in the buffer is shown in diagram 1.

3) The windows are stored in the RAM behind the BASIC ROM building up from 40960 ($A000) to 49151 ($BFFF). The buffer upper limit, which is initially set at 49151, can be altered by the programmer to give any buffer size from 256 bytes to 11k in 256 byte steps.

To alter the buffer size then use the following command

POKE 53211,160+X

where X= number of 256 byte blocks to make required buffer size.

eg.

Buffer size	X value	Buffer upper limit
8k (default)	32	49151($BFFF)
11k (maximum)	44	52223($CBFF)

4) Up to 255 windows can be saved in the buffer at any one time provided there is enough room. It should be noted that any program using this utility is not restricted to only 11k of windows as it is possible to save/load windows to/from disk or cassette during program execution.

5) When the C64 is first switched on the text screen is located at 1024 ($0400) and the window program will use this location unless told otherwise. If the screen has been moved to a new location by the programmer, then the window program must be alterd with the following command

POKE 53210,X

where X= (Location of first byte of screen memory/256)

Default value of X=4.

COMMANDS AND THEIR SYNTAX

All the commands are executed with a statement like:—

SYS52248,<command no.>,<parameters>

COMMAND 1

Save all windows to disk/cassette

SYS52248,1,"filename",8

Change the 8 to a 1 for cassette

COMMAND 2

Load a window file from disk/cassette

SYS52248,2,"filename",8

Change the 8 to a 1 for cassette

COMMAND 3

Delete all windows from buffer

SYS52248,3

This command must be used at the very beginning of any program using this utility to prepare the buffer for saving windows. There are a couple of exceptions to this rule. First there is no need to use this command if your program is to load windows from disk/cassette. Secondly windows can be shared by more than one program since they are not erased by the NEW command so be careful where you use this command when you chain programs.

COMMAND 4

Delete a particular window from the buffer. (Free the space for future windows)

SYS52248,4,<wno>

COMMAND 5

Save a window to the buffer.

SYS52248,5,<wn0>,<xpos>,<ypos>,<width>,<height>

COMMAND 6

Display a previously saved window to the screen. (This leaves the copy of the window in the buffer intact)

SYS52248,6,<wno>,<xpos>,<ypos>,<dflag>

The syntax of each command must be as it is shown here or the computer will display a syntax error message. The parameters that are passed to the program can either be constants, variables or expressions but all have restrictions on their values outside of which error messages are generated see Table 1.

WINDOW NO <wno>

This must be in the range 1-255 and must be unique for each window. There are no restrictions on the order that windows are saved or displayed.

Errors 2 & 3 can be generated. Error 10 is generated if <wn0>=0

WINDOW POSITION <xpos>,<ypos>

These represent the column and row of the top left byte of the window save or display position.

<xpos> must be in range 0-39

<ypos> must be in range 0-24

Error 4 or 5 will be generated if outside range.

WINDOW SIZE <width>,<height>

These represent the width and height of the window.

<width> must be in range 1-40

<height> must be in range 1-25

Error 6 or 7 will be generated if outside range. Also error 8 or 9 will be generated if the window does not fit on the screen.

DISPLAY FLAG <dflag>

The value of the flag determines the mode of display and is only used with Command 6.

0- window will overwrite screen memory

128- window will overwrite screen memory but will be displayed with reversed background and fore ground colours.

64 & 192 are the same as 0 & 128 except the window in the buffer is swapped with the screen. Repeating the command will return the original display.

CONTINUED ON PAGE 82

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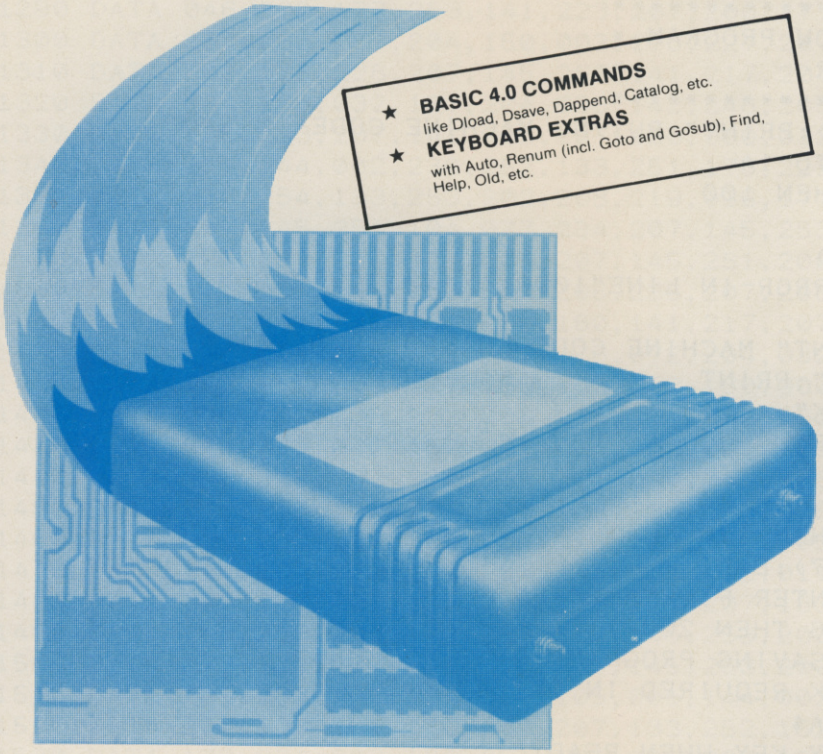

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ERROR MESSAGES

The program will display an error message and end program execution if the parameters passed to it in the command are illegal values eg. xpos = 41 The error message has the format

<WINDOW ERROR xx> IN In

where xx is the error number (1-12) see table 1 and In is the offending line number (In is not displayed in direct mode).

The program is presented here as a basic loader which when run, pokes the machine code into RAM. After this you will be given the option to save the code to disk or tape as a program file.

To use windows in your own programs then the machine code must be loaded into high RAM. To do this then start your program with the line

```
0 F=F+1 : IFF=1THEN LOAD
  "<filename>",8,1
```

Where <filename> is the name of the program file and 8 is the disk drive device no. (change to 1 for cassette).

FINAL POINTS

1) The program does not use any of the 38k of the RAM available for BASIC programs.

2) When the program is first loaded the buffer is set up at 8k and the program assumes the screen is located at 1024 ($0400). If you alter these values and then save the machine code with the command

SYS52224,"filename",8

then these new values will act as the default values when this copy of the program is next loaded.

A short BASIC demo program is included just to give you an idea of what the program can do. Line 1050 of the demo program loads the machine code which had previously been saved with the filename "WINDOWS" and can be omitted if the machine code is already in RAM. **P.L.**

```
10 REM************************************
20 REM* BASIC LOADER FOR WINDOW PROGRAM *
30 REM*          BY PETER LAGER          *
40 REM************************************
50 L=52224:E=0:PRINT CHR$(147):PRINT" PUTING MACHINE CODE IN RAM"
60 FOR X=0 TO 66:T=0:FOR Y=0 TO 14
70 READ A:IF A <0 OR A >255 THEN 100
80 POKE L,A:L=L+1:T=T+A:NEXT
90 READ A:T=T-(INT(T/256)*256)
100 IF T<>A THEN PRINT"DATA ERROR IN LINE"1000+(X*10)"CHECKSUM <>"A:STOP
110 PRINT1000+(X*10)"OK":NEXT
120 PRINT CHR$(147):PRINT:PRINT" MACHINE CODE LOADED INTO MEMORY"
130 PRINT"SELECT OPTION (1-3)":PRINT
140 PRINT"1) SAVE CODE TO DISK"
150 PRINT"2) SAVE CODE TO TAPE"
160 PRINT"3) EXIT PROGRAM"
170 GET A$:IF A$=""THEN 170
180 A=VAL(A$):IF A<1 OR A>3 THEN 170
190 IF A=3 THEN PRINT CHR$(147):END
200 PRINT CHR$(147);:INPUT" ENTER FILENAME";F$
210 IF LEN(F$)=0 OR LEN(F$)>16 THEN 200
220 A$="PREPARE CASSETTE FOR SAVING PROGRAM":D=1
230 IF A=1 THEN A$="PLACE DISK REQUIRED IN DRIVE":D=8
240 PRINT CHR$(147):PRINT" ";A$
250 PRINT:PRINT:PRINT" HIT ANY KEY WHEN READY"
260 POKE 198,0:WAIT 198,1:POKE 198,0
270 SYS 52224,F$,D
280 PRINT CHR$(147):PRINT" MACHINE CODE SAVED":END

1000 DATA 032,253,174,032,212,225,169,204,133,252,169,000,133,251,169, 104
1010 DATA 251,162,235,160,207,032,216,255,096,032,241,183,138,201,001, 106
1020 DATA 208,003,076,162,207,201,002,208,003,076,198,207,201,003,208, 171
1030 DATA 003,076,069,206,201,004,208,003,076,083,206,201,005,208,003, 016
1040 DATA 076,139,206,201,006,208,003,076,046,207,162,001,160,048,140, 143
1050 DATA 126,204,138,201,010,144,006,233,010,238,126,204,024,105,048, 025
1060 DATA 141,127,204,160,204,169,112,032,030,171,165,058,201,255,240, 221
1070 DATA 003,032,194,189,076,134,227,060,087,073,078,068,079,087,032, 139
1080 DATA 069,082,082,079,082,032,032,032,062,000,165,001,041,254,133, 122
1090 DATA 001,096,165,001,009,001,133,001,096,169,000,133,251,170,173, 119
1100 DATA 223,207,010,141,163,204,172,224,207,165,251,024,105,000,144, 192
```

```
1110 DATA 001,232,133,251,136,208,243,165,251,024,105,005,144,001,232,083
1120 DATA 141,225,207,142,226,207,096,173,225,207,024,109,216,207,141,242
1130 DATA 227,207,169,000,109,226,207,024,109,217,207,141,228,207,205,179
1140 DATA 219,207,096,032,130,204,169,160,133,254,169,000,133,253,160,015
1150 DATA 000,177,253,240,021,205,220,207,240,021,160,003,177,253,072,201
1160 DATA 200,177,253,133,254,104,133,253,076,224,204,032,137,204,056,136
1170 DATA 096,032,137,204,024,096,032,241,183,142,220,207,138,201,000,161
1180 DATA 208,007,162,010,104,104,076,072,204,096,032,241,183,142,221,070
1190 DATA 207,138,201,040,144,005,162,004,076,018,205,032,241,183,142,006
1200 DATA 222,207,138,201,025,144,005,162,005,076,018,205,096,173,221,106
1210 DATA 207,024,109,223,207,170,202,138,201,040,144,005,162,008,076,124
1220 DATA 018,205,173,222,207,024,109,224,207,170,202,138,201,025,144,221
1230 DATA 005,162,009,076,018,205,096,173,222,207,133,020,169,040,133,132
1240 DATA 021,024,169,000,162,008,106,102,020,144,003,024,101,021,202,083
1250 DATA 016,245,133,021,165,020,024,109,221,207,144,002,230,021,141,163
1260 DATA 229,207,141,231,207,173,218,207,024,101,021,141,230,207,169,202
1270 DATA 216,024,101,021,141,232,207,096,169,160,133,254,141,217,207,015
1280 DATA 169,000,133,253,141,216,207,032,130,204,160,000,177,253,240,011
1290 DATA 046,200,177,253,141,223,207,200,177,253,141,224,207,032,144,065
1300 DATA 204,032,187,204,160,003,173,227,207,072,145,253,141,216,207,127
1310 DATA 200,173,228,207,145,253,141,217,207,133,254,104,133,253,076,164
1320 DATA 174,205,032,137,204,096,142,248,205,140,249,205,174,224,207,082
1330 DATA 173,223,207,141,235,207,160,000,032,000,000,169,040,024,101,176
1340 DATA 251,144,002,230,252,133,251,173,223,207,024,101,253,144,002,086
1350 DATA 230,254,133,253,202,208,219,096,177,251,072,177,253,077,234,020
1360 DATA 207,145,251,104,077,234,207,145,253,200,206,235,207,208,234,097
1370 DATA 096,177,253,077,234,207,145,251,200,206,235,207,208,243,096,019
1380 DATA 177,251,145,253,200,206,235,207,208,246,096,169,000,141,000,230
1390 DATA 160,141,216,207,169,160,141,217,207,096,032,005,205,032,213,153
1400 DATA 204,144,005,162,002,076,072,204,032,130,204,160,003,177,253,036
1410 DATA 133,251,200,177,253,133,252,160,000,177,251,145,253,230,251,050
1420 DATA 208,002,230,252,230,253,208,002,230,254,165,252,205,219,207,101
1430 DATA 208,233,032,157,205,096,032,005,205,032,024,205,032,241,183,098
1440 DATA 142,223,207,202,138,201,040,144,005,162,006,076,072,204,032,062
1450 DATA 241,183,142,224,207,202,138,201,025,144,005,162,007,076,072,237
1460 DATA 204,032,057,205,032,213,204,176,005,162,003,076,072,204,032,141
1470 DATA 144,204,032,187,204,144,005,162,011,076,072,204,032,096,205,242
1480 DATA 173,216,207,133,253,173,217,207,133,254,160,000,173,220,207,166
1490 DATA 145,253,200,173,223,207,145,253,200,173,224,207,145,253,200,185
1500 DATA 173,227,207,141,216,207,145,253,200,173,228,207,141,217,207,126
1510 DATA 145,253,165,253,024,105,005,144,002,230,254,133,253,173,229,064
1520 DATA 207,133,251,173,230,207,133,252,162,058,160,206,032,230,205,079
1530 DATA 173,231,207,133,251,173,232,207,133,252,032,236,205,169,000,074
1540 DATA 168,145,253,096,032,005,205,032,024,205,032,241,183,138,041,008
1550 DATA 128,141,234,207,138,041,064,141,233,207,032,213,204,144,005,084
1560 DATA 162,002,076,072,204,032,130,204,160,001,177,253,141,223,207,252
1570 DATA 200,177,253,141,224,207,032,137,204,032,057,205,032,096,205,154
1580 DATA 169,005,024,101,253,144,002,230,254,133,253,032,130,204,173,059
1590 DATA 229,207,133,251,173,230,207,133,252,173,233,207,208,007,162,245
1600 DATA 044,160,206,076,142,207,162,021,160,206,032,230,205,173,231,207
1610 DATA 207,133,251,173,232,207,133,252,032,236,205,032,137,204,096,226
1620 DATA 032,253,174,032,212,225,032,130,204,169,160,133,252,169,000,129
1630 DATA 133,251,169,251,174,216,207,172,217,207,232,208,001,200,032,110
1640 DATA 216,255,032,137,204,096,032,253,174,032,212,225,169,000,170,159
1650 DATA 160,160,032,213,255,032,157,205,096,000,160,004,192,000,000,130
1660 DATA 000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000
```

CONTINUED ON PAGE 86

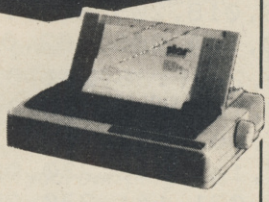
Evesham Micros

ALL PRICES INCLUDE VAT & DELIVERY

THE star NL-10

PRINTERS FOR BUSINESS

WHICH MAGAZINE BEST BUY



- **Automatic single sheet handling**
- **Tractor feed built in**
- **"Front Panel" mode selection**
- **Double and Quad height characters**
- **120 cps draft and 30 cps NLQ**

This is the best Commodore ready printer you can buy. Combines many unique features with **superb reliability, styling and print quality.** But the real beauty is that the interface cartridge is interchangeable so if you change comp-uters just buy a new interface.

In a group test with other popular printers such as Epson, Citizen and OKI *What Micro* magazine described the NL10 as **'the Rolls Royce of this group'.** ONLY **£249.00**

Automatic cut sheet feeder available as an option for **£63.25**

SELECTED PRODUCTS

1541C DRIVE. The latest version of the 1541, better drive mechanism and new colour ..... ONLY **£189.95**

DISC NOTCHER. Double the capacity of your discs with this handy gadget. Cuts second write protect notch accurately and easily ..... ONLY **£5.95**

AZIMATE 3000. Handy package allows you to easily check and realign the tape head of your CBM data recorder. Includes screwdriver ..... ONLY **£6.95**

MOTHERBOARD. 4-slot, with either all upright sockets, or three upright and one through socket, to suit modem; please specify ..... ONLY **£28.00**

POWER PACK. High quality replacement power pack for CBM 64 ..... ONLY **£24.95**

XETEC SUPERGRAPHIX. The best centronics printer interface for your 64/128. Large buffer, downloadable fonts, etc. ..... ONLY **£69.00**

DATA RECORDER. CBM compatible, same performance as the C2N/1531 but cheaper and includes a pause button. ..... ONLY **£24.95**

Large stocks of Commodore-related equipment at sensible prices. If you don't see what you want, give us a call.

DISKS AND BOXES

25 bulk-packed DS/DD disks with w/p tabs and labels ..... ONLY **£13.95**

25 disks as aove with 50 capacity lockable box ..... ONLY **£22.95**

25 disks as above with 100 capacity lockable box ..... ONLY **£24.95**

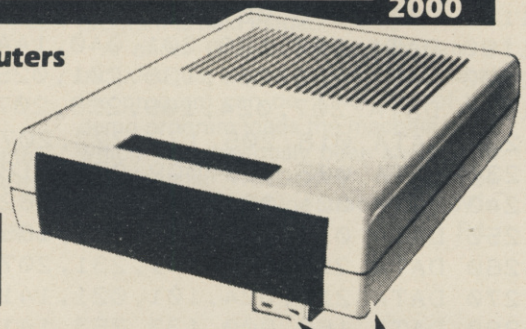
50 capacity lockable box ..... ONLY **£10.95**

100 capacity lockable box ..... ONLY **£13.95**

THE EVESHAM ENHANCER 2000

For COMMODORE Computers

The Evesham Micros version of this reliable and compact disc drive has a **new ROM** to ensure a **very high** degree of compatibility with disc turbos and protection schemes.



FEATURES

- ★ Handles Disc Turbos
- ★ Direct Drive Motor
- ★ 1 Year Guarantee
- ★ Highly Compatible
- ★ No Overheating
- ★ Very Reliable
- ★ Compact Size
- ★ Very Quiet

IMPORTANT: ONLY THE EVESHAM MICROS VERSION OF THIS DRIVE HAS THE NEW ROM THAT WILL HANDLE DISC TURBOS AND LOAD OVER 98% OF PROTECTION SCHEMES.

THREE PURCHASE OPTIONS —

OPTION 1
Evesham Enhancer with free s/ware.
ONLY £149.95

OPTION 2
Evesham Enhancer with free s/ware and Quickdisc + cartridge.
ONLY £159.95

OPTION 3
Evesham Enhancer with free s/ware, Freeze Frame Mk IV and 25 blank discs.
ONLY £179.95

WITH NEW COMPATIBLE ROM

THE SLIMLINE '64

Give your '64 the modern look

A NEW IMAGE FOR THAT FAVOURITE COMPUTER

- Easy to Fit
- Lower key height

This modern case with it's sleek style will transform your '64. The high quality injection mould is superbly finished in the latest ivory colour. The lower key height is also a boon to operator comfort. Fitting is very simple, requiring just a Philips screwdriver, and can be completed in less than 10 minutes. Stock now available so order for quick delivery.

Only **£19.95**

DOLPHIN DOS

YOU WON'T BELIEVE YOUR EYES!

THE EFFECT IS STAGGERING.

Now established as **THE parallel operating system** for the 1541 disc drive. Hundreds of satisfied users include business, hobby, full-time programmers, and **many leading software houses, including Gremlin Graphics, Domark, Superior, Alligata, Thalamus, Adventure International, and Software Projects.**

The speed and efficiency is truly unbelievable, it is compatible with **the vast majority of commercial software,** speeding up both the loading of the program **and of SEQ/REL files.** (It is brilliant with Superbase, Easyscript, etc.) For non-compatible programs it can be **completely switched out.** It DOES NOT use a special disc format and your existing discs will be compatible.

FITTING

Fitting involves the insertion of two sub assembly circuit boards, one in the 1541 and one in the '64/'128. These normally just plug in but on some '64s a small amount of soldering is necessary.

SOME OF THE FEATURES

- ★ 25x FASTER LOADING (PRG FILES)
- ★ 12x FASTER SAVING (PRG FILES)
- ★ 10x FASTER LOADING (SEQ FILES)
- ★ 8x FASTER SAVING (SEQ FILES)
- ★ 3x FASTER LOAD/SAVE (REL FILES)
- ★ E.G. LOAD 202 BLOCKS IN 5 SECS
- ★ EASY AND FAST DOS COMMANDS
- ★ USE 40 TRACKS FOR 749 BLOCKS
- ★ MONITOR BUILT IN
- ★ DRIVES CENTRONICS PRINTER
- ★ ENHANCED SCREEN EDITOR
- ★ EXTRA BASIC COMMANDS

(These figures do not allow for searching)

Best Hardware Utility of year

EXTRAS AVAILABLE . . .

Kernal for '128 in '128 mode	**£9.95**
User port expansion card (3 slot)	**£14.95**
Dolphin Copy (Whole disc in 18 secs and lightning fast file copier)	**£7.95**
Dolphin main board for second drive c/w lead	**£44.95**

If you require further information, please send SAE for fact sheet

Only **£69.95**
Available for CBM 64, or '128 in '64 mode, please specify.

In Australia: contact **Micro Accessories of S.A.,** Unit 8, Hewittson Road, Elizabeth West, S. Australia 5113. Tel: (08) 287-0191

THE CHOICE IS YOURS!

BACKUP CARTRIDGES

THE FACTS

Almost eighteen months ago, Freeze Frame Mk I revolutionised backup methods. Since then many imitators have appeared on the market. Some of the claims being made for certain of these products are rather misleading. Let us inform you of some positive facts.

1. **Much of the new software released uses "Anti-Freeze"; only Freeze Frame and one other product can handle these.**
2. **Only Freeze Frame can automatically handle these and other programs. You don't need to be an "Expert" or need "O" levels to operate Freeze Frame.**
3. **At press date (11.2.87) our exhaustive tests were unable to find any memory resident program that both Freeze Frame Mk IV and Lazer were unable to back up, completely automatically.**
4. **Similar tests with all rival products proved disastrous.**

THESE ARE THE FACTS
(not outrageous advertising claims)

FREEZE FRAME Mk IV

NEW PRICE . . . WHY SETTLE FOR LESS!

Now you can buy a **pedigree Freeze Frame** backup cartridge for a startling new price. **No need to settle for less,** this is the latest development of the originator. **More power, more features, easier to use.**

POWER

Legendary amongst Commodore owners but with continual development now even more impressive.

FEATURES

Three cartridges in one . . . fast load, utilities and backup.

TAPE to DISC **TAPE to TAPE**
DISC to DISC **DISC to TAPE**

So simple to use, just plug in and switch on, at the menu choose your option, no messing with software, it's always ready.

Load the program that you wish to backup, press the button on Freeze Frame, then you can either:

1. **Press "D" to save to disc with fast reload.**
2. **Press "S" to save to disc with standard reload.**
3. **Press "T" to save to tape with fast reload.**

MULTI STAGE PROGRAMS

The standard cartridge will transfer to disc **many tape based multi stage programs, e.g. Summer Games II, Silent Service, Winter Games, etc.** and when used in conjunction with the regularly updated **"F.F. Utility Disc"** the **vast majority** of programs of this type can be handled.

MORE FEATURES

- ★ **Doubles as a fast load cartridge**
- ★ **Loads extra parts fast**
- ★ **Built-in Fast Format**
- ★ **Built-in File Copier (up to 248 blocks)**
- ★ **New "SELECTALOAD" feature (Press "L" for directory, select with cursors, then press F3 to load.**
- ★ **Undetectable by software**
- ★ **Files compressed for disc economy**
- ★ **128/128D compatible in '64 mode**

PROGRAM RELOAD IS INDEPENDENT OF CARTRIDGE

NOW ONLY **£28.95**

At this price there is no need to settle for less

UPGRADES: Mk I or II . . . £14.95
Mk III or IIIB . . . £9.95
Mk IV to LAZER . . . £11.95

FREEZE FRAME LAZER

ANOTHER TRENDSETTER?

From the design team that changed the face of backup technology comes **another innovation.** The powers of Freeze Frame have been combined with a **staggeringly quick** new loading system. An **amazing 32K of ROM** provides you with **all the facilities of Freeze Frame Mk IV** as described opposite, plus the stunning new **LAZER** loading technique.

Check these LAZER features

- ★ **Reload a program in 10-15 seconds**
- ★ **Fast saving of programs**
- ★ **Loads extra parts at VERY HIGH speed**
- ★ **Load speed approx. 20× normal**
- ★ **Uses standard disc format**
- ★ **Includes RESET**

Cartridge must be present to reload at LAZER speed
Proven power with stunning new technology:

ONLY **£39.95**

UPGRADES: Mk I or II . . . £29.95
Mk III or IIIB . . . £19.95
Mk IV . . . £11.95

"F.F." UTILITY DISC V2.0

Now with **many more** routines to allow the complete transfer from tape to disc of programs that load parts as the program progresses. Used **in conjunction with Freeze Frame** for the awkward ones that cannot be handled by the standard cartridge. Included are routines for most popular games like **Supercycle, World Games, Gauntlet, Trivial Pursuit, Ace of Aces, Dragons Lair I & II (includes training mode), etc., etc.**

ONLY **£7.95**

Update fee for owners of **V1.0** is **£2.00**

DISC DISECTOR V5.0

The fifth version of the country's **leading** disc backup/utility program. This latest version includes **many "PARAMETERS"** to handle the latest highly protected discs. This includes the latest **American and English software.** Be warned if you want to back up software by Ocean, Gremlin, Hewson, Domark, and even U.S., Gold whose protection schemes are NOT always the same as the American versions, then you **MUST have "D.D.".** At press date, **we are sure NO other advertised product will handle all these, be it American or German.**

INCLUDES THE FOLLOWING

- ★ **EVESHAM 3 MINUTE NIBBLER**
- ★ **EVESHAM 8 MINUTE NIBBLER**
- ★ **MANY PARAMETERS** (The vital code for the protection schemes)
- ★ **DUAL DRIVE NIBBLER**
- ★ **MENU MAKER (with select facility)**
- ★ **DISC ORDERLY**
- ★ **FAST FORMAT**
- ★ **FAST FILE COPY**
- ★ **UNSCRATCH**
- ★ **DISC RESCUE**
- ★ **DISCMON+**
- ★ **ETC., ETC., ETC.**

The whole package is menu driven and has its own fast boot system built in for your convenience. Pays for itself the first day you receive it.

ONLY **£24.95**

Customers with earlier versions may return them along with a payment of **£7.95** to receive **V5.0.**
Most routines are CBM 128 and 1570/71 compatible in '64 mode.

QUICKDISC+

Our highly popular fast load and save plus utility cartridge has received many favourable reviews.

- ★ **FAST LOAD (5 to 7 times improvement)**
- ★ **FAST SAVE (5 to 7 times improvement)**
- ★ **FAST FORMAT (20 seconds)**
- ★ **FAST BACKUP (4 minutes)**
- ★ **FAST FILE COPY (up to 248 blocks)**
- ★ **EASY DOS COMMANDS**
- ★ **CENTRONICS PRINTER DRIVER**
- ★ **RESET BUTTON (unstoppable)**
- ★ **HELPS MENU**
- ★ **USES NO MEMORY**
- ★ **'128 COMPATIBLE ('64 mode)**

Exception value for money at only . . .

£19.95

1541 QUIET STOPS

Cure for ever the dreaded 1541 drive head "hammering".

- ★ **Easy to fit**
- ★ **Detailed instructions**
- ★ **One kit does two drives**
- ★ **Helps prevent misalignment**

ONLY **£4.95**

Not suitable for "turn lever" type drives.

DOUBLER

THE tape backup "device"

Many thousands of this popular product have been sold and sales continue to flourish. Why? We think because it is the best product of it's type. Consisting of hardware and software it uses a unique method controlled by the software that allows you to produce perfect backups of your tape software.

It is very easy to use and very successful, in fact our tests have proved that Doubler can achieve 100% success.

ONLY **£12.95**

1541 PHYSICAL EXAM

Have you got . . .

Alignment problems

If so, you need this package. Contains digital alignment disc and drive fault diagnosis software that allows you to check **and correct** head alignment.

- ★ **CHECKS RADIAL ALIGNMENT**
- ★ **CHECKS SPEED**
- ★ **CHECKS BELT AND CLAMPING**
- ★ **THOROUGH INSTRUCTIONS**
- ★ **INCLUDES QUIET STOPS**

ONLY **£39.95**

ORDERING INFORMATION

ALL PRICES INCLUDE VAT AND FREE DELIVERY WITHIN U.K. (Despatch within 24 hours whenever possible)

HOW TO ORDER

By Post
Send cheque, P.O., or ACCESS/VISA details to our Evesham address

By Phone
Call our Evesham branch and quote your ACCESS/VISA details

EVESHAM MICROS, 63 BRIDGE ST, EVESHAM, WORCS. WR11 4SF

CALLERS WELCOME **Tel: 0386 41989 Telex: 333294** **TRADE ENQUIRIES WELCOME**

Also at: 1756 Pershore Road, Cotteridge, Birmingham B30 3BH. Tel: 021 458 4564

All items subject to availability, E.&O.E. Orders from Government and Educational departments welcome.
Overseas Orders: Within Europe, please send advertised price. Outside Europe, add **£2.00** for Air Mail

```
1000 REM ----------------------------
1010 REM DEMO PROGRAM TO DISPLAY SOME
1020 REM OF THE POSSIBLE USES OF THIS
1030 REM        UTILITY.
1040 REM ----------------------------
1050 F=F+1:IF F=1 THEN LOAD"WINDOWS",8,1
1060 REM"CHANGE TO 1 FOR  CASSETTE  "
1070 Z=52248:SYS Z,3
1075 C$=CHR$(147):D$=CHR$(17):R$=CHR$(29)
1076 L$=CHR$(157):H$=CHR$(19)
1080 POKE 53281,1
1090 FOR I=2 TO 8:POKE646,I
1100 PRINT C$;"**********"
1110 PRINT"*--------*"
1120 PRINT"*--------*"
1130 PRINT"*--------*"
1140 PRINT"*--------*"
1150 PRINT"*--------*"
1160 PRINT"*--------*"
1170 PRINT"*--------*"
1180 PRINT"*--------*"
1190 PRINT"**********"
1200 PRINT H$;D$;R$;R$;"MENU";STR$(I-1)
1210 SYS Z,5,I,0,0,10,10
1220 NEXT I
1230 PRINT C$;" PULL DOWN MENU DISPLAY"
1240 D=64:GOSUB 1460
1250 PRINT C$:"NOW IN REVERSE"
1260 D=192:GOSUB 1460
1270 PRINT C$;:POKE 646,1
1280 PRINT"   ***"
1290 PRINT"  *   *"
1300 PRINT" *     *"
1310 PRINT"*********"
1320 PRINT" *******"
1330 PRINT" **   **"
1340 PRINT"**     **"
1350 SYS Z,5,20,0,0,9,8
1360 POKE 646,7
1370 PRINT H$;D$;D$;D$;D$;D$;R$;R$;R$;R$;"#";D$;L$;L$;"###"
1380 SYS Z,5,22,0,0,9,8
1390 POKE 646,5:POKE 53281,0
1395 FOR DE = 2 TO 0 STEP-1
1400 PRINT C$;"VERY SIMPLE":PRINT"ANIMATION";D$;D$;D$;D$:A=20
1410 FOR I=17 TO 0STEP-1
1420 A=42-A
1430 SYS Z,6,A,18,I,0
1440 FOR J=0 TO DE*100:NEXT J,I:REM "SLOW DOWN ANIMATION"
1450 NEXT:END
1460 FOR I=2 TO 8:SYS Z,6,I,10+2*I,2*I-2,D
1470 FOR J=0 TO 200:NEXT J,I
1480 FOR I=8 TO 2 STEP-1:SYS Z,6,I,10+2*I,2*I-2,D
1490 FOR J=0 TO 200:NEXT J,I
1500 RETURN
```

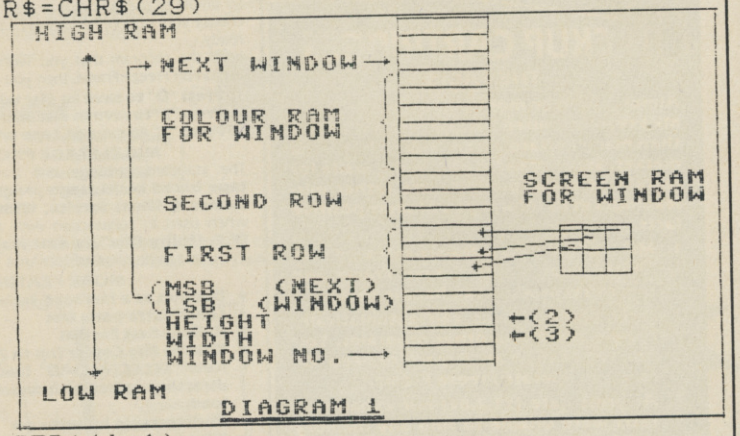


DIAGRAM 1

ERROR	MESSAGE
1	BAD COMMAND NO.
2	NO SUCH WINDOW
3	WINDOW ALREADY EXISTS
4	BAD XPOS
5	BAD YPOS
6	BAD WIDTH
7	BAD HEIGHT
8	BAD XPOS + WIDTH
9	BAD YPOS + HEIGHT
10	BAD WINDOW NO.
11	NO ROOM TO STORE WINDOW

ERROR NOS. AND THEIR MESSAGES

TABLE 1

Inside Info

ICPUG is a highly influential organisation and brings many benefits to its members across the whole range of Commodore activity. CCI considered that a regular column from ICPUG would be of interest to many readers. The views expressed by ICPUG may not be those of CCI

It was very nice to receive some offers for my two printers, but the sale was only mentioned tongue in cheek so sorry folks, no deal (yet!). Anyway at least it shows that some of you read this column.

Something that many people join ICPUG for is the Public Domain Library. ICPUG are pleased to announce the release of 25 disks worth of very carefully categorised freeware and Public Domain software for the new C range of machine. These disks which are in 3½" format have been expanded from public domain disks available elsewhere with many carefully chosen and fully proven programmes. As you would expect with quality software from ICPUG, all the programmes are fully documented. Further disks in the series are under preparation and will be announced when available.

The Librarian for our 3½" product is Mike Todd who can be contacted at 27 Nursery Gardens, Lodge Field, Welwyn Garden City, Herts, AI7 1SF. Concerning our libraries in other disk formats (mainly 5¼") for all other Commodore computers, contact the Chief Librarian, Joe Griffin, Clovelley, Lynwick Street, Rudgewick, Horsham, Sussex RH12 3DJ.

As an additional service to members we are producing disks of directories, so that by sending a blank disk to whichever librarian a complete list of all software for your computer is available in machine readable form (this saves a vast amount of printer time and literally reams of paper). Naturally, as with all ICPUG services, this is completely free to all members.

The logistics of running a club like ICPUG can be pretty horrendous. Last year we had something over 3,000 members spread throughout Britain, and some in Europe, America and other far-flung places, to keep things ticking over, we have a 'National Committee' which is elected annually at A.G.M. This committee meets roughly bi-monthly at a secret location in Northumberland Avenue, near London. There we discuss what's happening with all the various activities we're involved in, attempt to sort out any major world crises, make politics and decisions for the future, and criticise each others various magazine/book ramblings. Actually its not that bad, but we just had a committee meeting this week. The best part of these meetings is the drink in the pub afterwards. Here it is that one can glean all sorts of interesting information about Commodore, both nationally and internationally, and that fact alone makes the trek from the south coast up to the smoke worthwhile.

Our major concern is always to make the best use of our resources, and one of our major resources is money, it doesn't take a vast amount of intellect to work out that 3,000 members will raise us £30,000 in subscriptions alone, plus there is income from magazine adverts etc. Now this may seem a lot of money, and yes, on the face of it, it is. But a large proportion of this goes into producing our magazine, which if you have seen it, you will agree is probably the most informative quality publication in the computer industry. The rest goes into software libraries, comms networking, publicity, exhibitions etc etc. **T.W.A.**

MICROCOMPUTER SUPPLIES
OFFICIAL COMMODORE AMIGA DEALER

COMPUTERS

THE COMMODORE AMIGA + Full On-site Maintenance	PHONE
Sidecar for Amiga	PHONE
Commodore 64C Connoisseur's Pack with NEOS Mouse	199.00
Commodore 128	207.00
Commodore 128D Built-in 1571 Disk Drive	439.00
Commodore 128D Built-in 1571 Disk Drive + Mono Mon	489.00

PRINTERS

Citizen 560P two colour 40col Dot Matrix	43.47
Citizen 120D Dot Matrix 120cps & NLQ fric/trac	181.74
Commodore MPS1000 Dot Matrix 100cps & NLQ fric/trac	219.00
Star NL10 with C64/128 Interface 120cps & NLQ f/t	220.00

MONITORS

Commodore 1901 14" Colour Monitor for C64/128	263.00
Philips 8533 14" Med Res Colour Mon for C128 incl lead	245.00
Philips BM7502 Green Monitor for C64/128 incl lead	72.00

MISCELLANEOUS

Commodore 1541C Disk Drive	159.00
Commodore 1571 Disk Drive	226.00
Cent Interface for C64/128	26.04
Cent Interface for C64/128 with 8k buf & graphics	51.30
RS232 Interface for C64/128 with disk software	49.95
Commodore 64 Power Supply	23.00
Commodore 1530 Cassette Recorder	31.00
Surge Protector 13 Amp Plug (Adapter £13)	10.39
The Final Cartridge II	33.91
NEOS Mouse Cheese with cassette for C64	39.13
Horasoft 80/40 Column Switch for C128	11.26
Amiga DOS Reference Manual (NO VAT) (p&p £2)	24.95
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Program

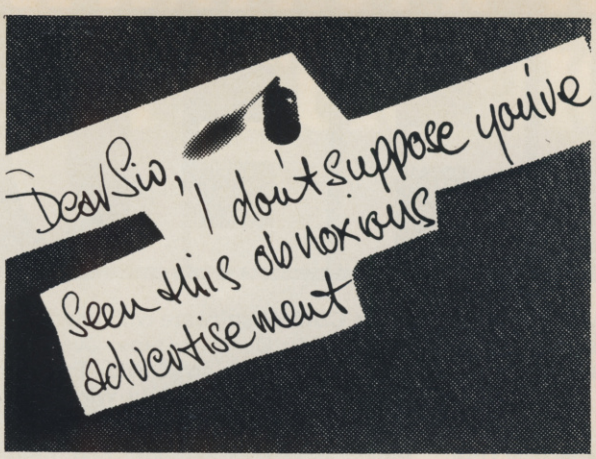
Border Sprite

by Lee A. Brown

This is a neat 64 Assembly program which enables you to put sprites in the border (top and bottom). It is a useful trick for presenting games and demos. We know that Lee Brown has been asked by many people how to do this, so we are printing it as he says, 'to put them out of their misery.' Well, we hope it doesn't go that far!

```
0 REM ***********************************
1 REM *                                 *
2 REM * BORDER SPRITE BY LEE A. BROWN *
3 REM *                                 *
4 REM ***********************************
10 L=49152
20 FOR X=0 TO 6:T=0:FOR Y=0 TO 14
30 READ A:IF A <0 OR A >255 THEN 60
40 POKE L,A:L=L+1:T=T+A:NEXT
50 READ A:T=T-(INT(T/256)*256)
60 IF T<>A THEN PRINT"DATA ERROR IN LINE"100+(X*10)"CHECKSUM <>"A:STOP
70 PRINT100+(X*10)"OK":NEXT
100 DATA 120,169,034,141,020,003,169,192,141,021,003,169,001,141,026, 070
110 DATA 208,169,127,141,013,220,169,000,141,014,220,173,025,208,141, 177
120 DATA 025,208,088,096,173,025,208,141,025,208,173,018,208,041,160, 005
130 DATA 240,025,041,128,240,029,169,000,141,032,208,173,017,208,041, 156
140 DATA 247,141,017,208,169,000,141,018,208,076,049,234,169,048,141, 074
150 DATA 018,208,076,049,234,169,000,141,033,208,173,017,208,009,008, 015
160 DATA 141,017,208,169,249,141,018,208,076,049,234,000,000,000,000, 230
```

```
1 REM ***********************************
2 REM *                                 *
3 REM *         TEST PROGRAMME          *
4 REM *                                 *
5 REM ***********************************
10 SYS 49152
20 V=53248
30 POKE V+21,1
40 POKE 2040,192
50 POKE V+39,1
60 POKE V,100
70 FOR L = 1 TO 10
80 FOR X = 0 TO 255
90 POKE V+1,X
100 NEXT
110 NEXT
```



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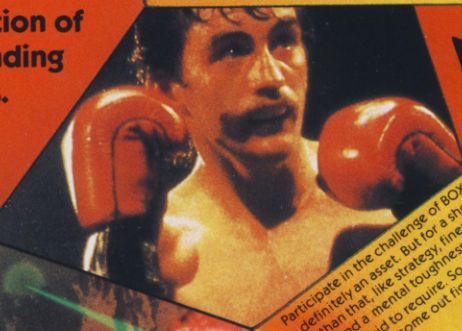

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